Lockheed Martin Corporation
6801 Rockledge Drive MP: CCT-246
Bethesda, MD 20817
Telephone (301) 548-2227

December 11, 2015

VIA PRIVATE CARRIER

Mr. James R. Carroll
Program Administrator
Land Restoration Program
Land Management Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 625
Baltimore, Maryland 21230

Subject: Transmittal of the Groundwater Monitoring Report April–June 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Dear Mr. Carroll:

For your review, please find enclosed two hard copies with CD of the above-referenced document. This report groundwater monitoring report summarizes the April–June 2015 groundwater sampling round at Lockheed Martin's Middle River Complex in Middle River, Maryland. If possible, we respectfully request to receive MDE's comments by February 1, 2016.

Please let me know if you have any questions. My office phone is (301) 548-2227.

Sincerely,

Lynnette Drake
Remediation Analyst, Environmental Remediation

Enclosures:

cc: (via email without enclosure)
Gary Schold, MDE
Mark Mank, MDE
Tom Blackman, Lockheed Martin
Christine Kline, Lockheed Martin
Norman Varney, Lockheed Martin
John Morgan, LMCPI
Dave Brown, MRAS
Michael Martin, Tetra Tech
Cannon Silver, CDM Smith

cc: (via mail with enclosure)
Tom Green, LMCPI
Mike Musheno, LMCPI
Justin Tetlow, MRAS
Doug Mettee, Lockheed Martin MST

cc: (via mail with CD enclosure)
Jann Richardson, Lockheed Martin

Groundwater Monitoring Report
April–June 2015
Lockheed Martin Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

Prepared by:

Tetra Tech, Inc.

December 2015



Michael Martin, P.G.
Regional Manager



Anthony Apanavage, P.G.
Project Manager

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ACRONYMS

BTEX	benzene, toluene, ethylbenzene, xylenes
COC	chain(s) of custody
cVOC	chlorinated volatile organic compound
cis-1,2-DCE	*cis*-1,2-dichloroethene
DO	dissolved oxygen
GIS	geographic information system
GLM	Glenn L. Martin Company
IDW	investigation-derived waste
LMCPI	LMC Properties, Inc.
Lockheed Martin	Lockheed Martin Corporation
MDE	Maryland Department of the Environment
MEE	methane, ethane, and ethane
µg/L	microgram(s) per liter
ml/min	milliliter(s) per minute
MRAS	MRA Systems, Inc.
MRC	Middle River Complex
MTBE	methyl *tert*-butyl ether
NAA	natural-attenuation assessment
NAVD88	North American Vertical Datum of 1988
ORP	oxidation-reduction potential
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PDF	portable document format
PM	project manager
QA	quality assurance
QC	quality control
RAP	response action plan
SVOC	semivolatile organic compound
TB	trip blank
TCE	trichloroethene
Tetra Tech	Tetra Tech, Inc.
USDOT	United States Department of Transportation

USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compound

Section 1
Introduction

This groundwater monitoring report summarizes the April–June 2015 groundwater sampling round at the Lockheed Martin Corporation (Lockheed Martin) Middle River Complex (MRC) in Middle River, Maryland. Figure 1-1 shows the location of the Middle River Complex. This sampling event provides a current round of groundwater levels and chemical data for selected wells as part of ongoing environmental investigations at the facility. These data will be used to better understand the nature and extent of chemical contamination in groundwater, evaluate the trends of chemical plumes in on-site groundwater, and evaluate the natural attenuation of groundwater chemicals of concern at the Middle River Complex.

Groundwater samples were analyzed for volatile organic compounds (VOCs), 1,4-dioxane (a semivolatile organic compound [SVOC]), polychlorinated biphenyls (PCBs), metals, natural-attenuation assessment (NAA) parameters, and perchlorate. All wells were inspected to assess their integrity and any need for repairs during the sampling event; 13 wells were repaired. This report is organized as follows:

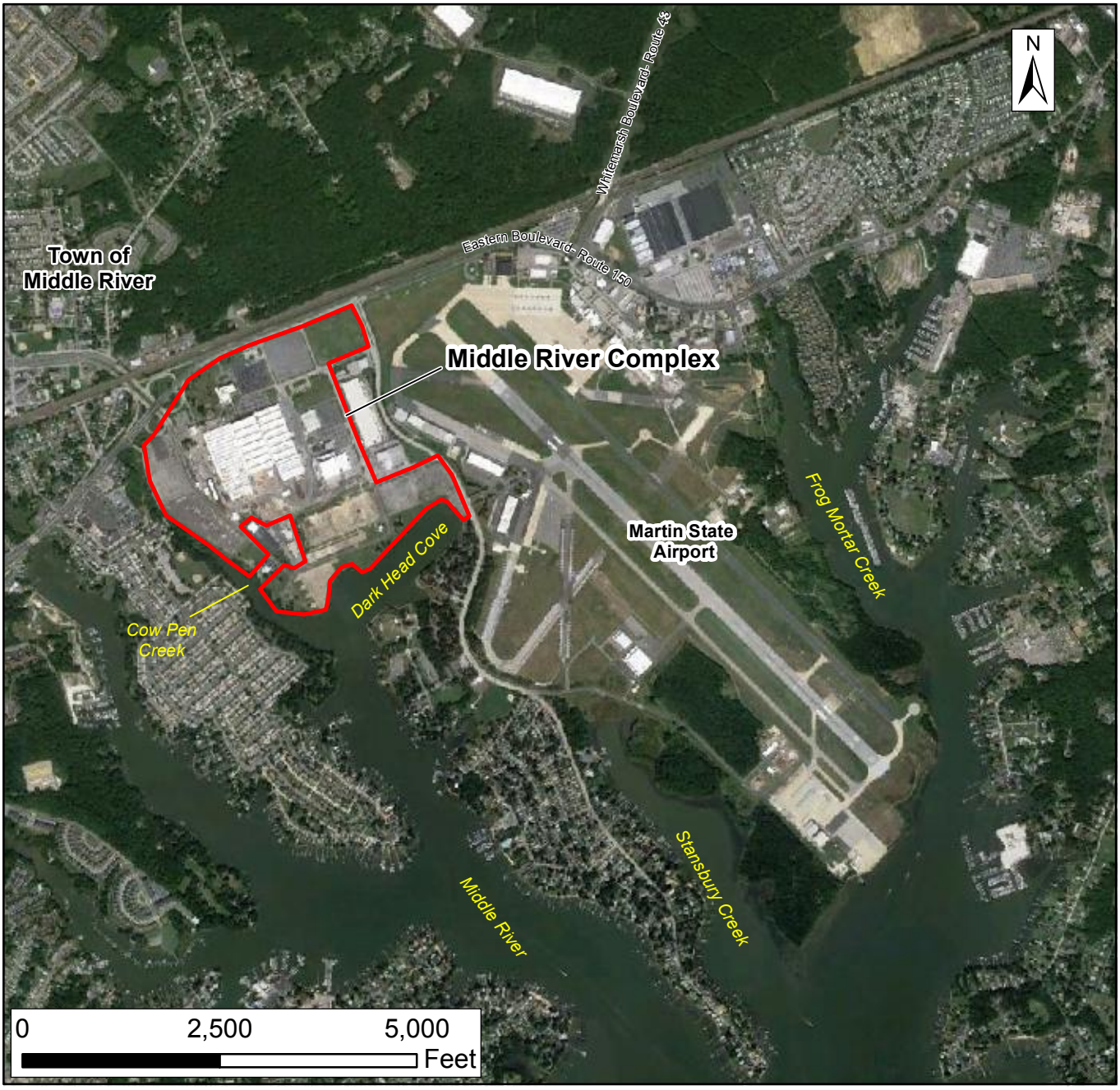
Section 2—Site Background: Briefly summarizes the site and references recent reports containing detailed background information related to groundwater.

Section 3—Investigational Approach: Presents the technical approach to the investigation and describes the field methodologies used.

Section 4—Investigation Results: Presents the investigation results.

Section 5—Summary: Summarizes the investigation findings.

Section 6—References: Cites references used to compile this report.



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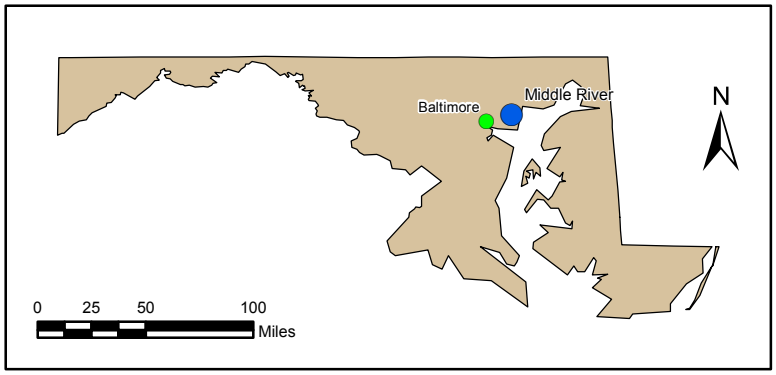

FIGURE 1-1

MIDDLE RIVER COMPLEX
LOCATION MAP

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
5/1/13	MP

TETRA TECH

Map Document: (K:\GProject\middle_river\Maps\MiddleRiver_MRC_Location Map_Fig 1-1_revised050113.mxd) 5/1/2013 -- 11:18:55 AM

Section 2
Site Background

2.1 MIDDLE RIVER COMPLEX HISTORY AND SITE CHARACTERISTICS

The Middle River Complex (MRC), part of the Chesapeake Industrial Park at 2323 Eastern Boulevard in Middle River, Maryland, is approximately 11.5 miles northeast of downtown Baltimore. It comprises approximately 161 acres, including 12 main buildings, an active industrial area and yard, perimeter parking lots, an athletic field, a vacant concrete lot, trailer and parts storage areas, and numerous grassy spaces along its perimeter. It is bounded by Eastern Boulevard (Route 150) to the north, Martin State Airport (MSA) to the east, Dark Head Cove to the south, and Cow Pen Creek to the west. Figure 2-1 is a map showing the MRC layout.

MRC is owned by LMC Properties, Inc. (LMCPI), a subsidiary of Lockheed Martin Corporation (Lockheed Martin). Currently, LMCPI's primary activities at the MRC are facility and building management and maintenance. The main site tenant, MRA Systems, Inc., (MRAS) (a subsidiary of General Electric Company), designs, manufactures, fabricates, tests, overhauls, repairs, and maintains aeronautical structures, parts, and components for military and commercial applications. Lockheed Martin Mission Systems & Training (a Lockheed Martin business segment) conducts engineering and fabricates, assembles, tests, and otherwise supports vertical-launch systems. Applied NanoStructured Solutions LLC (a subsidiary of Lockheed Martin) also occupies a portion of the MRC, and is engaged in research and design of nanotechnology applications.

In 1929, the Glenn L. Martin Company (GLM) (a predecessor entity of Lockheed Martin) acquired large parcels of undeveloped land in Middle River, Maryland on which to manufacture aircraft for United States government and commercial clients. In the early 1960s, GLM merged with American-Marietta Company to form Martin Marietta Corporation. Around 1975, the adjacent eastern airport area (currently MSA), comprised of approximately 750 acres, was transferred to the State of Maryland. In 1995, Martin Marietta Corporation merged with Lockheed to form Lockheed Martin Corporation. Shortly after the merger, General Electric Company acquired most

of Lockheed Martin's aeronautical business in Middle River, and MRAS began operations at the site.

The MRC is an industrial facility surrounded primarily by commercial, industrial, and residential establishments. Six facilities adjacent to the MRC comprise the remaining portion of the Chesapeake Industrial Park. These include Tilley Chemical Company, Inc. (a food- and pharmaceutical-chemical distributor), North American Electric, Inc. (an industrial and commercial electrical contractor), Johnson and Towers (a heavy-duty automotive and boat repair and maintenance company), Ashley Furniture, Exxon (a gasoline filling station and convenience store), and the Middle River Post Office. Residential developments are on the opposite shores of Cow Pen Creek, Dark Head Cove, and Dark Head Creek, and north of Eastern Boulevard (Route 150).

2.2 GROUNDWATER

Investigations of MRC groundwater began in 1988 and are ongoing. Groundwater at MRC is encountered at depths ranging from less than one foot to nearly 18 feet below grade. Shallow groundwater follows site topography and flows radially from the hydraulically upgradient northern portion of the MRC at Eastern Boulevard and immediately south of Buildings A, B, and C to the southeast, south, and southwest toward Dark Head Cove and Cow Pen Creek. Deeper groundwater is typically under hydraulically confined conditions at the MRC. Lithologic logging of the soils beneath the MRC has identified a very heterogeneous stratigraphy. Underlying soils are composed primarily of silty sands, fine- to medium-grained sands, silty clays, clayey silts, and plastic clay, with the primary lithology being clay to silty clay. Areas along the waterfront have been filled to their present elevation over past decades.

A risk assessment (Tetra Tech, Inc., [Tetra Tech], 2006) identified trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride (VC), benzene, and certain metals as the most significant contaminants in groundwater at the MRC. The two largest groups of organic chemicals of concern are chlorinated volatile organic compounds (cVOCs) and petroleum-related hydrocarbons. CVOCs include the commonly used solvents PCE and TCE, which degrade into a variety of other cVOCs and volatile organic compounds (VOCs). CVOCs are in groundwater in several areas of the facility; three areas of elevated cVOCs (Figure 2-2) in groundwater are targeted by the current groundwater remedy program (Tetra Tech, 2012a).

Petroleum-based fuels such as gasoline have numerous chemical constituents. Several VOCs associated with fuels are fairly soluble in groundwater and are therefore mobile in the subsurface. The most commonly detected petroleum-VOCs at MRC are benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl *tert*-butyl ether (MTBE).

1,4-Dioxane is also a groundwater chemical of concern because it has been detected at concentrations above its selected screening-concentration for MRC groundwater, and because it is an emerging contaminant nationwide. The screening level used for 1,4-dioxane is the California Department of Health Services advisory level of 3 µg/L (see Section 4.2); Maryland currently has no drinking water or groundwater standard/advisory for 1,4-dioxane. Metals (primarily nickel, cobalt, beryllium, and zinc) have also been detected in groundwater at concentrations above Maryland Department of the Environment (MDE) groundwater standards.

The MRC *Groundwater Response Action Plan* (Tetra Tech, 2012a) was approved by MDE in 2012. Construction of the groundwater treatment remedy for cVOCs in Tax Blocks E, G, and I began in early summer 2013. During installation of the groundwater remedy in Block E, two underground storage tanks (USTs) were discovered near the foundation of former Building D. UST 2, which contained high concentrations of TCE, was identified and removed during installation of the *in situ* bioremediation system. UST 1, which was nearly empty when discovered, was also removed. Subsequent investigations indicate that the mass and concentrations of TCE in the immediate vicinity of UST 2 would not be readily addressed solely via *in situ* bioremediation. With MDE approval, Tetra Tech installed a multi-phase extraction (MPE) system in Block E in 2014. The system is scheduled to cease operating in late 2015. The purpose of the MPE system is to remove TCE mass from the subsurface near former UST 2.

This groundwater response action is being conducted in accordance with a pending consent order with MDE. The groundwater response action uses enhanced anaerobic-bioremediation in three areas of MRC to treat areas with high groundwater concentrations of TCE. The response action is being conducted in the southeastern TCE area (Block E), the southwestern TCE area (Block G), and the northern TCE area (Block I). These three areas are shown on Figure 2-2.

Semi-permanent injection wells were installed to inject biological amendments into the subsurface. These wells are arranged in rows and connected via underground conveyance piping to injection equipment in each of three TCE areas. The injection equipment and controls are housed in two

modified shipping containers (the equipment modules). The system allows flexibility in selecting and setting system parameters, such as the number of operational injection wells, substrate type and dosage, and injection rates, volumes, and durations. A tracer study was done at Blocks G and I (May–July 2014) before the full-scale injection event to evaluate the effects of injection and determine the main injection parameters for a full-scale injection event (*Operation and Maintenance Plan for Groundwater Remediation System Appendix A,* [Tetra Tech, 2014a]).

The first injection was made in Blocks G and I in February–June 2015. Block E operations are delayed by the need to address the TCE source associated with UST 2 found in the injection area, and will begin later in 2015. The general operational procedures and details of the system operation are described in *Operation and Maintenance Plan for Groundwater Remediation System* (Tetra Tech, 2014a). Additional details regarding MRC background and history, including details of previous environmental investigations and discussions of contaminant source areas, are in the response action plan (RAP) and subsequent groundwater monitoring reports (Tetra Tech, 2009, 2012a–d; 2013; 2014b).

Town of Middle River

AMTRAK RAILROAD

EASTERN BOULEVARD

MARTIN BLVD.

BLOCK 'A'

BUILDING "E"

PARKING LOT NO. 5

BLOCK 'A'

PARKING LOT NO. 1

BUILDING "M"

BUILDING "P"

GATE "A"

BUILDING "L"

PARKING LOT NO. 2

MAINTENANCE OFFICE AND SHOP

BLOCK 'H'

BLOCK 'I'

BUILDING "C"

BUILDING "B"

BUILDING "A"

FIRECOAT BUILDING

EXXON GAS STATION

PARKING LOT NO. 4

BLOCK 'B'

ATHLETIC FIELD

CHESAPEAKE PLAZA

POST OFFICE

ANNEX BUILDING

ENG. DEV. LAB BLDG.

PROGRAM BUILDING

WILSON POINT ROAD

Martin State Airport

JOHNSON AND TOWERS

VERTICAL ASSEMBLY BUILDING

DARK HEAD COVE ROAD

PARKING LOT NO. 6

BLOCK 'D'

BLOCK 'D' PANHANDLE

DROP HAMMER BUILDING ACTIVE FIRING RANGE

MAINTENANCE GARAGE

FOUR #2 FUEL OIL USTs ABANDONED IN-PLACE

POWER HOUSE

DRUM STORAGE FACILITY

FLAME CUT

DIE STORAGE

CHESAPEAKE PARK PLAZA

PARKING LOT NO. 3

BLOCK 'G'

HAZARDOUS WASTE STORAGE BUILDING

BLOCK 'E'

500,000-GAL. WATER TANK

TRANSFER SHED

FORMER BUILDING "D"

FIRE PUMP BUILDING WITH 275-GAL DIESEL FUEL AST

FORMER 500-GAL. UST

FORMER 500,000-GAL. DIESEL FUEL AST

CONSERVATION BUILDING

TILLEY CHEMICAL COMPANY

FORMER SEWAGE TREATMENT PLANT

NORTH AMERICAN ELECTRIC

CHESAPEAKE PARK PLAZA

WATERFRONT LOT

DARK HEAD COVE

FORMER AERO PYHSICS LAB, WIND TUNNEL TEST BUILDING

FORMER HYDRAULIC AND FIELD TEST BUILDING

COW PEN CREEK

SEVEN 1,000-GAL. AVIATION FUEL USTs ABANDONED IN-PLACE

BLOCK 'F'

FORMER TRAINING SCHOOL

FORMER RAMP STORAGE BUILDING

FORMER BOAT HOUSE

FIGURE 2-1

MIDDLE RIVER COMPLEX
SITE LAYOUT AND TAX BLOCKS

LEGEND

- MIDDLE RIVER COMPLEX TAX BLOCK BOUNDARY
- STRUCTURE OR FORMER STRUCTURE
- RAILROAD TRACKS

Lockheed Martin Middle River Complex
Middle River, Maryland

0 150 300 600 Feet

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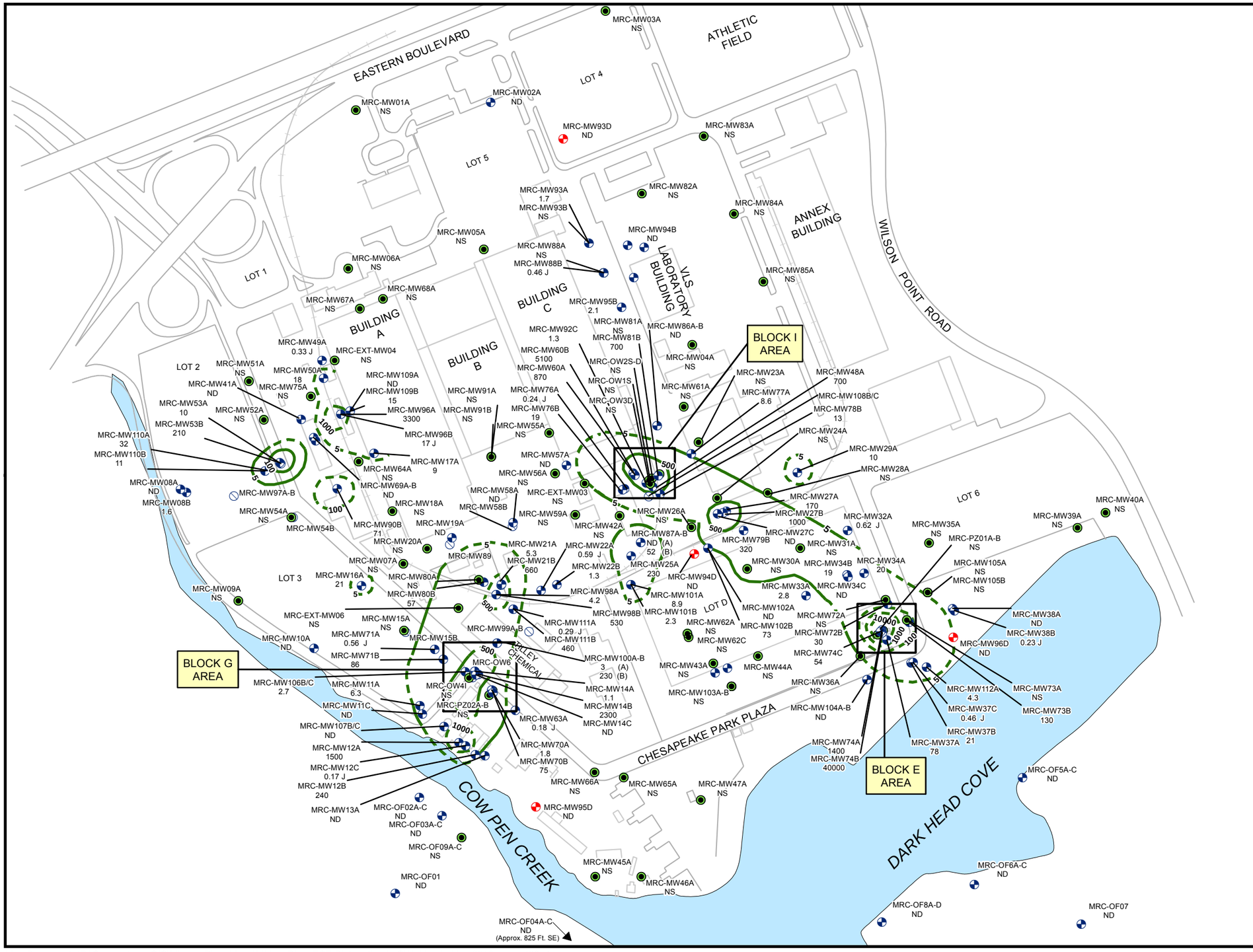

FIGURE 2-2

DISTRIBUTION OF TCE IN GROUNDWATER AND GROUNDWATER REMEDY AREAS

LEGEND

- GROUNDWATER REMEDY AREA
- GROUNDWATER MONITORING WELL SAMPLED
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (SAMPLED)
- WELLS NOT SAMPLED
- ABANDONED WELL BORING
- TCE CONCENTRATION IN UG/L (DASHED WHERE INFERRED)
- 52 MAXIMUM CONCENTRATION IN WELL (UG/L)
- SURFACE WATER

ND = NOT DETECTED
NS = NOT SAMPLED
TCE = TRICHLOROETHENE
UG/L = MICROGRAMS PER LITER

GROUNDWATER STANDARD FOR TCE IS 5 UG/L

Lockheed Martin Middle River Complex
Middle River, Maryland

0 200 400 Feet

N

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Section 3
Investigational Approach

The 2015 groundwater sampling program for the Middle River Complex (MRC) included synoptic groundwater-level measurements and the collection of groundwater samples for laboratory chemical analyses. This sampling round augments groundwater data and level measurements obtained from 2003–2014.

3.1 SYNOPTIC GROUNDWATER-LEVEL MEASUREMENTS

A synoptic round of groundwater level measurements was conducted on March 31–April 1, 2015. The air- and water-tight sanitary seals on flush-mounted well casings were opened the day before water levels were measured to allow air pressure and groundwater in the casings to reach equilibrium. Static water levels were measured using a graduated electronic-sounding water-level meter. The static water level was determined by lowering the meter's probe into the well until the liquid level-indicator emitted an audible tone, indicating the air/water interface. The water level was read from the probe cable and recorded to the nearest 0.01 foot as the depth to water, with respect to the top of the plastic well casing. Water levels and the time of measurement were recorded for the monitoring wells on a field form and used to develop groundwater-elevation contour maps for the surficial aquifer. Several wells could not be accessed due to large equipment on the well covers. Other wells were not measured because they provided redundant data for adjacent or nearby wells. Groundwater-level field forms are in Appendix A.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from 122 on-site wells from April 13–June 25, 2015. Chemical analyses of groundwater samples varied by well and depended on the data needed for that particular area. Most samples were analyzed for volatile organic compounds (VOCs) and total (i.e., unfiltered) metals. Less frequent chemical analyses include 1,4-dioxane (a semivolatile organic compound [SVOC]), perchlorate (a component of propellants), polychlorinated biphenyls (PCBs), dissolved gasses (i.e., methane, ethane, and ethane [MEE]), and natural-attenuation

assessment (NAA) parameters. Wells sampled for this round are shown on Figure 3-1; the chemical analyses performed for each sample are listed in Table 3-1.

Some variations from the 2014–2015 work plan occurred during the 2015 sampling round. An attempt was made to sample well MW08B, which was scheduled to be sampled for VOCs, 1,4-dioxane, and perchlorate. However, well MW08B appeared to be compromised and was not sampled this round. Well MW72B was sampled for 1,4-dioxane in place of the sample that was scheduled for well MW08B. Additionally, wells MW113A and MW114A were sampled for 1,4-dioxane because it has been detected in earlier sampling rounds (see Table 3-1 of the 2014–2015 work plan). Well MW113A was also sampled for perchlorate, because a recent sampling round (2013) indicated a concentration above the groundwater standard of 2.6 µg/L, but a second round (2014) indicated a perchlorate concentration below the standard.

Wells were purged and sampled using the following procedures:

- ***Well purging***—Monitoring wells were purged before sample collection using low-flow-purging techniques via a peristaltic pump (fitted with dedicated, disposable, Teflon®-lined tubing) positioned in the center of the well's saturated-screen length. The pumping rate during purging ranged between 100 to 300 milliliters per minute (ml/min) and was constantly measured using a graduated cylinder. The purge rate was adjusted but was not allowed to fall below 100 ml/min, to minimize drawing the water level below its static water level.

  Water-level-drawdown measurements and groundwater parameters were collected every five to 10 minutes until purging was complete. Groundwater parameters (including pH [a measure of acidity and alkalinity], temperature, specific conductance, dissolved oxygen [DO], oxidation-reduction potential [ORP], and turbidity) were also measured during purging. These data were recorded on low-flow-purge data sheets. Water-quality parameters were measured with an inline water-quality meter. Turbidity readings were collected using a separate turbidity meter. Groundwater purging and sample record sheets are in Appendix B.

  Purging was considered complete when the monitored water-quality parameters stabilized, when three saturated well-casing volumes had been removed, or the well had been purged dry. Stabilization was considered achieved when three consecutive readings taken at five-minute intervals were within ±0.1 standard units for pH, ±3% for specific conductance and temperature, ±10% for DO and ORP, and less than 10 nephelometric turbidity units for turbidity. If the monitoring well was purged dry, the water level was allowed to recover at least 80% of its initial static water level before groundwater sampling occurred. All purged water was collected in United States Department of Transportation (USDOT)-approved 55-gallon steel drums that were staged in the central portion of the MRC D-lot.

- ***Sample collection—***Monitoring wells were sampled after purging, using the same dedicated tubing or submersible pump that had been used during purging. Groundwater was pumped directly into certified-clean sample containers supplied by the analytical laboratory. Sample containers for VOC analyses were filled directly, to minimize VOC losses. Groundwater samples for VOCs were collected first, followed by samples to be analyzed for 1,4-dioxane, PCBs, metals, perchlorate, and NAA parameters.

3.3 WELL REPAIR

All MRC monitoring wells were inspected during the 2015 groundwater sampling program, and 13 wells were repaired. Documentation for the 2015 inspection includes a written survey of existing well conditions and a list of the repairs required. Groundwater was sampled before repairs were made; the condition of the wells requiring repair did not affect sampling or groundwater quality. Needed repairs included replacing well cover parts (four wells) and replacing concrete pads and flush-mounted covers (nine wells). Details of these well repairs are in the *2015 Monitoring Well Repair Report* (Tetra Tech, Inc. [Tetra Tech], 2015) and are not discussed further herein.

3.4 LABORATORY ANALYSES

Samples from the subject wells were analyzed for the following chemicals (Table 3-1):

- VOCs, by United States Environmental Protection Agency (USEPA) Method 8260C
- 1,4-dioxane, by USEPA Method 522
- PCBs, by USEPA Methods 8082A (Aroclors) and 680 (PCB homologs)
- total metals, by USEPA Methods 6020A, 6010C, and 7470A (mercury)
- perchlorate, by USEPA Method 6850
- NAA parameters, by USEPA SW846 protocols (for nitrate/nitrite, ammonia nitrogen, orthophosphate, potassium, sulfate, chloride, total alkalinity, total iron, total manganese, silicon dioxide, total dissolved solids, and dissolved organic carbon)
- MEE by USEPA Method RSK-175

Samples were analyzed at a fixed-base laboratory by ALS Environmental of Middletown, Pennsylvania. Duplicates were collected at a rate of 5% (1:20 basis) to evaluate laboratory analytical precision. Trip blank (TB) samples were analyzed for VOCs for quality assurance (QA)

and quality control (QC). Trip blanks were submitted at a rate of one per cooler of VOCs per day. Matrix-spike/matrix-spike-duplicate samples were also collected and analyzed on a 1:20 basis.

3.5 DOCUMENTATION

A master site logbook was maintained to document field activities. Sample documentation consists of completed chain-of-custody (COC) reports and matrix-specific sample log sheets. The COC report is a standardized form summarizing and documenting pertinent sample information such as sample identification and type, the sampled matrix, date and time of collection, preservation, and requested analysis. Sample custody procedures document sample acquisition and integrity. COC reports are in Appendix C with the data validation reports.

3.6 EQUIPMENT DECONTAMINATION

Reusable equipment (e.g., water-level meter, submersible pump) was decontaminated before and after each use. Decontamination of reusable small equipment involved the following:

- Liquinox® (a laboratory-grade, phosphate-free, ionic/anionic surfactant) and potable-water wash
- potable-water rinse
- distilled-water rinse
- air drying

Decontamination-rinsate water was transferred into 55-gallon drums staged in the central portion of the MRC D-lot for subsequent disposal. Dedicated and/or disposable equipment that did not require decontamination was used for groundwater purging/sampling.

3.7 WASTE MANAGEMENT

Well purge-water was collected as investigation-derived waste (IDW) in USDOT-approved 55-gallon steel drums. The drums were stored at an approved central staging area on the facility's D-lot, pending waste-profile-sampling results. Clean Harbors, Inc. (a state-licensed waste transporter) sampled the IDW and deemed it nonhazardous. Upon receipt of the IDW analytical data, Clean Harbors, Inc. removed the IDW from the MRC and properly disposed of it as nonhazardous waste at the Clean Harbors, Inc. Cleveland, Ohio facility (a Lockheed Martin

Corporation- [Lockheed Martin-] approved waste treatment facility) in accordance with federal, state, and local regulations.

3.8 GENERAL SAMPLING PROCEDURES, NOMENCLATURE, AND HANDLING

A master site logbook was maintained for the sampling program to document field activities. Each sample collected was given a unique sample identification consisting of the well name and sampling date (e.g., MRC-MW-25A-051315). Trip blanks were labeled with a "TB" prefix followed by a six-digit submittal date (e.g., TB-051315). Sample handling includes field-related considerations concerning selection of sample containers, preservatives, allowable holding times, and analyses requested.

Proper custody procedures were followed throughout all phases of sample collection and handling. COC protocols were used throughout sample handling to document the integrity of sample containers. These protocols demonstrate that samples were handled and transferred in a manner that eliminates (or detects) possible tampering. Sample containers were released under signature from the laboratory and were accepted under signature by a responsible individual who maintained custody until the sample containers were transferred to the sampling team. Groundwater samples were released under signature from the sampling team and were accepted under signature by the laboratory.

Transport containers returning to the laboratory were sealed with strapping tape and a tamper-resistant custody seal. The custody seal shows the signature of the individual releasing the transport container, along with the date and time. Signed COC are in Appendix C along with the data validation reports.

3.9 DATA VALIDATION

Data validation involves having a party independent of the analytical laboratory review the laboratory data to ensure that specific criteria established in the sampling and analysis work plan and in the analytical method are met. These criteria are concerned with specifications that are not sample-dependent; they specify performance requirements that should be fully under a laboratory's control. For organic-data analyses, specific validation areas include blanks, performance-evaluation-standard materials, and instrument-performance checks. For

inorganic-data analyses, specific validation areas include blanks, calibration standards, calibration-verification standards, laboratory-control standards, and interference-check standards. Once the investigation was complete, chemical data were validated by Tetra Tech in accordance with established USEPA protocols to assess the reliability and accuracy of the data. This review was based on the USEPA Region 3 modifications to the *National Functional Guidelines for Data Review* (USEPA, 1993 and 1994) and the specifics of the analytical method used. Data-validation reports are in Appendix C (on compact disc).

Validation of these data concluded that they are acceptable for their intended uses (i.e., risk screening and risk assessment), except for data qualified as unreliable (UR or *R* flags). The data qualifiers (i.e., flags) applied to the chemical results during data validation are listed below:

J The analyte is considered present in the sample, but the value is estimated and may not meet highest accuracy or precision standards. In this program, samples were qualified with "*J*" because quantitation was above the method detection limit but below the practical quantitation limit. A "*J*" qualifier can also be applied if one or more quality control specifications were not met. In these cases, if non-conformance did not affect correct identification of the analyte, but could have resulted in quantitation that did not meet highest accuracy or precision standards, a "*J*" qualifier would be applied.

U Not detected; the analyte is considered not detected at the reported value.

UJ The analyte was not detected. However, the quantitation or detection limit may be inaccurate or imprecise.

UR The non-detect result is considered qualitatively or quantitatively unreliable. Results flagged with "UR" data qualifiers include 1,4-dioxane (27 samples using the VOC analytical method 8260C) and methyl acetate (three samples).

R The detected result is considered qualitatively or quantitatively unreliable. Results flagged with an "*R*" data qualifier include 1,4-dioxane (two samples using the VOC analytical method 8260C).

Two of these flags (i.e., *J,* and *U*) appear on the chemical-results tables in Section 4; all flags are in Appendices C and D.

3.10 DATA MANAGEMENT

Laboratory data-handling procedures met the requirements set forth in the laboratory subcontract. All analytical and field data are maintained in the project files. The project files contain copies of the COC, sampling log forms, sampling location maps, and data quality-assurance documentation.

3.10.1 Data Tracking and Control

A "cradle to grave" sample tracking system was used from the beginning to the end of the sampling event. The field operations leader coordinated sample tracking before field mobilization. Sample jar labels were handwritten in the field. Labels were reviewed to ensure their accuracy and adherence to work plan requirements. The project manager's (PM) assistant coordinated with the analytical laboratory to ensure that they were aware of the number and type of samples and analyses to expect.

When field sampling was underway, the field operations leader forwarded the COC to the PM's assistant and to the laboratory for each day that samples were collected. The PM's assistant confirmed that the COC provided the information required by the work plan. This allowed early detection of errors made in the field so adjustments could be made while the field team was mobilized. The laboratory submitted an electronic deliverable for the sample delivery groups. When all electronic deliverables had been received from the laboratory, the PM's assistant confirmed that the laboratory performed all analyses requested.

3.10.2 Sampling Information

Data from field measurements were recorded using the appropriate log sheets, as per Tetra Tech's standard operating procedure SA-6.3. Reduction of field data entailed summarizing and presenting these data in tabular form. Reduction of laboratory data entailed manipulating raw data-instrument output into reportable results. Laboratory data were verified by the group supervisor and then by the laboratory's QC/documentation department.

3.10.3 Project Data Compilation

The analytical laboratory generated an Adobe *Acrobat*® portable document format (PDF) file of the analytical data packages, as well as an electronic database deliverable. The electronic database was checked against the PDF file provided by the laboratory and updated as required, based on data qualifier flags applied during data validation. Data generated during implementation of the sampling and analysis plan were incorporated into the MRC environmental geographic information system (GIS) database. All data (such as units of measure and chemical nomenclature) were checked to maintain consistency with the project database.

3.10.4 Geographical Information System

The data management system for this effort consists of a relational database and GIS to manage environmental information pertaining to MRC. The relational database stores chemical, geological, hydrogeologic, and other environmental data collected for the MRC environmental investigations. The GIS is built from the relational database and contains subsets of the larger data pool. Using the GIS, environmental data were posted onto base maps to represent the information graphically for this report.

Table 3-1

Chemical Analyses for Wells Sampled in 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Well ID	Volatile organic compounds (VOCs) (USEPA 8260C)	1,4-Dioxane (USEPA 522)	Perchlorate (USEPA 6850)	Total priority pollutant metals (USEPA 6020A/6010C/ 7470A)	Polychlorinated biphenyls (PCBs) (USEPA 8082A or 680)	MEE and NAA parameters (MEE by USEPA RSK-175; NAA by Misc. Methods)	Wells sampled (one or more analyses)
MRC-MW01A			x				x
MRC-MW02A	x			x			x
MRC-MW04A				x			x
EXT-MW06		x					x
MRC-MW07A		x		x			x
MRC-MW08A	x	x	x	x			x
MRC-MW08B							
MRC-MW09A							
MRC-MW10A	x	x		x			x
MRC-MW11A	x	x		x			x
MRC-MW11C	x	x					x
MRC-MW12A	x	x		x		x	x
MRC-MW12B	x	x		x		x	x
MRC-MW12C	x	x					x
MRC-MW13A	x	x					x
MRC-MW14A	x	x		x			x
MRC-MW14B	x	x		x		x	x
MRC-MW14C	x	x		x			x
MRC-MW15A		x		x			x
MRC-MW16A	x	x		x			x
MRC-MW17A	x	x	x	x			x
MRC-MW19A	x	x		x			x
MRC-MW21A	x	x		x			x
MRC-MW21B	x	x		x		x	x
MRC-MW22A	x	x		x			x
MRC-MW22B	x	x		x			x
MRC-MW24A				x		x	x
MRC-MW25A	x	x		x		x	x
MRC-MW26A				x			x
MRC-MW27A	x			x		x	x
MRC-MW27B	x			x		x	x
MRC-MW27C	x						x
MRC-MW29A	x			x			x
MRC-MW30A				x			x
MRC-MW31A				x			x
MRC-MW32A	x						x
MRC-MW33A	x			x			x
MRC-MW34A	x						x
MRC-MW34B	x			x		x	x
MRC-MW34C	x						x
MRC-MW37A	x			x		x	x
MRC-MW37B	x					x	x
MRC-MW37C	x						x
MRC-MW38A	x		x				x
MRC-MW38B	x						x
MRC-MW41A	x	x	x	x			x
MRC-MW42A				x			x
MRC-MW43A					x[(1)]		x
MRC-MW44A		x			x[(1)]		x
MRC-MW46A				x			x
MRC-MW48A	x			x		x	x
MRC-MW49A				x			x

Table 3-1

Chemical Analyses for Wells Sampled in 2015
Lockheed Martin Middle River Complex, Middle River, Maryland
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Well ID	Volatile organic compounds (VOCs) (USEPA 8260C)	1,4-Dioxane (USEPA 522)	Perchlorate (USEPA 6850)	Total priority pollutant metals (USEPA 6020A/6010C/ 7470A)	Polychlorinated biphenyls (PCBs) (USEPA 8082A or 680)	MEE and NAA parameters (MEE by USEPA RSK-175; NAA by Misc. Methods)	Wells sampled (one or more analyses)
MRC-MW50A	x		x	x			x
MRC-MW52A			x	x			x
MRC-MW53A	x	x	x	x			x
MRC-MW53B	x	x	x	x			x
MRC-MW54A		x	x				x
MRC-MW57A	x			x			x
MRC-MW58A	x	x					x
MRC-MW59A				x			x
MRC-MW60A	x		x	x			x
MRC-MW60B	x		x	x		x	x
MRC-MW61A				x			x
MRC-MW62A				x	x(2)		x
MRC-MW62C				x	x(2)		x
MRC-MW63A	x	x		x			x
MRC-MW67A				x			x
MRC-MW68A				x			x
MRC-MW69A	x	x	x	x			x
MRC-MW69B	x	x	x				x
MRC-MW70A	x	x		x			x
MRC-MW70B	x	x					x
MRC-MW71A	x	x		x			x
MRC-MW71B	x	x		x			x
MRC-MW72B	x		x			x	x
MRC-MW73B	x						x
MRC-MW74A	x		x				x
MRC-MW74B	x		x				x
MRC-MW76A	x			x			x
MRC-MW76B	x			x			x
MRC-MW77A	x			x			x
MRC-MW78B	x			x			x
MRC-MW79B	x			x			x
MRC-MW80A		x		x			x
MRC-MW80B	x	x					x
MRC-MW81A				x			x
MRC-MW81B	x			x		x	x
MRC-MW87A	x						x
MRC-MW87B	x			x			x
MRC-MW88B	x						x
MRC-MW90B	x	x	x				x
MRC-MW91A		x					x
MRC-MW92C	x			x			x
MRC-MW93A	x			x			x
MRC-MW94B	x						x
MRC-MW95B	x						x
MRC-MW96A	x	x	x	x			x
MRC-MW96B	x	x	x	x			x
MRC-MW98A	x	x		x			x
MRC-MW98B	x	x		x			x
MRC-MW100A	x	x					x
MRC-MW100B	x	x		x			x
MRC-MW101A	x						x
MRC-MW101B	x						x

Table 3-1

Chemical Analyses for Wells Sampled in 2015
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 3 of 3

Well ID	Volatile organic compounds (VOCs) (USEPA 8260C)	1,4-Dioxane (USEPA 522)	Perchlorate (USEPA 6850)	Total priority pollutant metals (USEPA 6020A/6010C/ 7470A)	Polychlorinated biphenyls (PCBs) (USEPA 8082A or 680)	MEE and NAA parameters (MEE by USEPA RSK-175; NAA by Misc. Methods)	Wells sampled (one or more analyses)
MRC-MW102A	x						x
MRC-MW102B	x			x			x
MRC-MW103A					x(1)		x
MRC-MW103B					x(1)		x
MRC-MW104A	x						x
MRC-MW104B	x			x			x
MRC-MW105A				x			x
MRC-MW106B/C	x						x
MRC-MW107B/C	x			x			x
MRC-MW109A	x		x	x			x
MRC-MW109B	x		x	x			x
MRC-MW110A	x	x	x	x			x
MRC-MW110B	x	x	x	x			x
MRC-MW111A	x	x					x
MRC-MW111B	x	x		x			x
MRC-MW112A	x			x			x
MRC-MW113A	x	x	x		x(2)		x
MRC-MW114A	x	x			x(1)		x
MRC-MW115A	x						x
MRC-MW116A	x						x
TOTAL	94	51	25	79	8	15	122

Well MRC-MW08B was not sampled because well integrity appeared to be compromised.

x - sample analyzed for indicated parameter

1 Analyzed by Method 8082A (PCB Aroclors)

2 Analyzed by Method 680 (PCB homologs)

A - upper surficial aquifer well

B - intermediate surficial aquifer well

C - lower surficial aquifer well

D - deep confined aquifer well

EXT Existing (for wells installed prior to the VCP in 2002)

MEE- methane, ethane, and ethene

MRC - Middle River Complex

NAA - natural attenuation assessment

OF - off facility well

OW- Observation well; OW wells not typically sampled

PCBs - polychlorinated biphenyls

RSK - Robert S. Kerr (Laboratory) - USEPA

USEPA - United States Environmental Protection Agency

VOC - volatile organic compounds

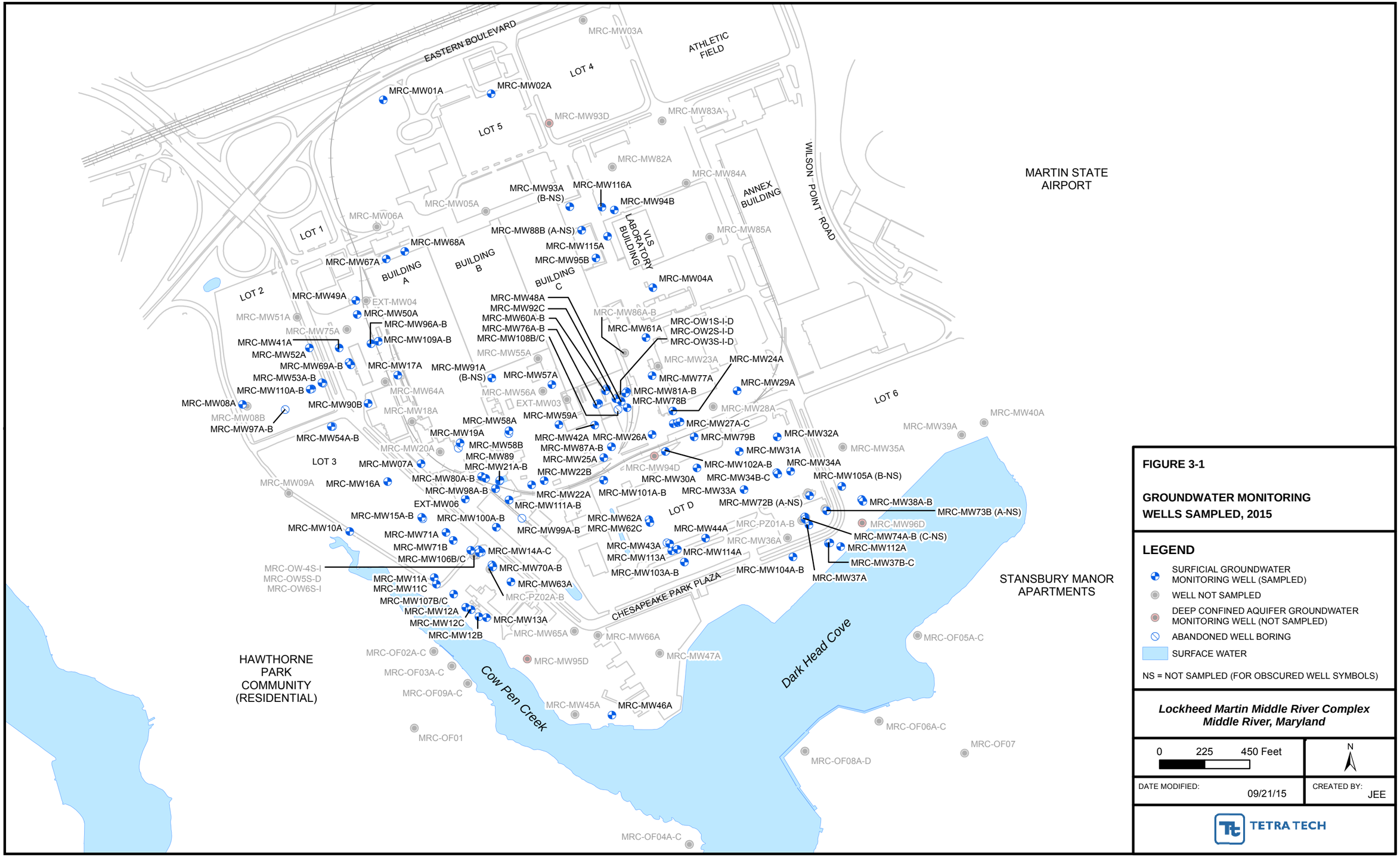


FIGURE 3-1

GROUNDWATER MONITORING WELLS SAMPLED, 2015

LEGEND

- SURFICIAL GROUNDWATER MONITORING WELL (SAMPLED)
- WELL NOT SAMPLED
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- SURFACE WATER

NS = NOT SAMPLED (FOR OBSCURED WELL SYMBOLS)

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 09/21/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\middle_river_gw_locs_2015.mxd)
09/21/15 -- JEE

Section 4
Investigation Results

This section presents the results of the 2015 groundwater-elevation data and groundwater sampling and chemical analyses program for the Middle River Complex (MRC). Although most well designations begin with the prefix "MRC-," that prefix is dropped in the discussions below to improve readability.

4.1 GROUNDWATER LEVEL DATA

Table 4-1 lists the 2015 groundwater level measurements and computed groundwater elevations for wells at the MRC. Figures 4-1 and 4-2 show the groundwater-elevation contour maps for the upper/intermediate and lower surficial-aquifer zones, respectively. As presented in Table 4-1, static groundwater levels in the wells were recorded as groundwater depths measured from the top of the well casings and converted to elevations based on the North American Vertical Datum of 1988 (NAVD88). Several wells could not be accessed because of equipment stored over the casings. Other wells were not measured because they provided redundant data for adjacent or nearby wells.

Groundwater elevations for the surficial aquifer ranged from 0.94 feet above NAVD88 at well MW112A (southeastern portion of MRC near Dark Head Cove) to 32.46 feet above NAVD88 at well MW57A (south of Buildings B and C). Accounting for well-casing stick-down for flush-mounted well designs, groundwater depths ranged from less than one foot to approximately 21 feet below grade in the surficial aquifer. Shallow groundwater was encountered near the ground surface along the shorelines of Cow Pen Creek and Dark Head Cove (at wells MW08A, MW09A, MW10A, MW15A, and MW39A) and in Block E (at wells MW30A, MW43A, MW44A, and MW62A).

Groundwater depth measurements at or near 0.00 feet indicate groundwater levels at or near the top of the well casing, which is near the ground surface for most wells. A negative value, such as that for MW08B (-3.00), indicates a static water level above the casing as measured using a temporary well-casing extension. Depth to surficial aquifer groundwater was measured at

13–18 feet deep north and west of Building A (at wells MW67A, MW50A, and MW05A); approximately 15 feet deep in the northwestern corner of Block E (at well MW101A); approximately 6–9 feet deep south of Building A (MW19A and MW20A); and approximately 10 feet deep south of Building C (MW42A).

Figures 4-1 and 4-2 show the groundwater-elevation contour maps for the upper ("A" and "B") and lower ("C") surficial-aquifer wells, respectively. The March 31–April 1, 2015 groundwater flow for the surficial aquifer is similar to that depicted in previous investigations. However, the March–April 2015 surficial-aquifer groundwater elevations are generally higher than those collected in September 2014.

As shown in Figure 4-1, shallow groundwater follows the site topography and flows radially from the hydraulically upgradient northern portion of the MRC (at Eastern Boulevard and immediately south of Buildings A, B, and C) to the southeast, south, and southwest toward Dark Head Cove and Cow Pen Creek. Subsurface sandy zones act as preferential pathways for contaminant transport in groundwater, possibly originating from an upgradient source in the clay-rich materials. Groundwater in the lower surficial-aquifer (Figure 4-2) flows southeast from the area south of Buildings A–C toward Dark Head Cove.

4.2 GROUNDWATER CHEMICAL RESULTS

Validated groundwater-chemical data were used to generate a statistical summary table (Table 4-2) and a "hits" table (Table 4-3) summarizing positive detections of chemical analytes in the 2015 groundwater samples. Appendix D presents all analytical data for 2015, including non-detects. The groundwater results for volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), metals, and perchlorate (Table 4-3) are compared against current Maryland Department of the Environment (MDE) groundwater standards (MDE, 2008).

At present, MDE has not established an advisory level or standard for 1,4-dioxane in drinking water or groundwater. Several states (e.g., California, Colorado, Connecticut, Florida, Maine, Massachusetts, Michigan, and North Carolina) have established drinking water standards or action levels for 1,4-dioxane, ranging from California's action level of 3 micrograms per liter (µg/L) to Michigan's drinking water standard of 85 µg/L (United States Environmental Protection Agency [USEPA], 2006 and 2009, respectively). USEPA has also published a preliminary remedial goal of

6.1 µg/L for 1,4-dioxane in tap water (USEPA, 2006) and a risk-based regional screening-level of 0.67 µg/L for tap water (USEPA, 2014).

Regional tap-water screening levels are not typically adopted as enforceable standards; therefore, the current advisory level or the standard most protective of human health is used as a comparison criterion to evaluate groundwater concentrations of 1,4-dioxane in this report. The California Department of Health Services advisory level (3 µg/L) is used herein as the groundwater screening level. Gray shading in Table 4-3 indicates results exceeding Maryland groundwater standards (or the California action level used for 1,4-dioxane). Chemical results for the 2015 groundwater sampling episode are discussed below according to analyte group (i.e., VOCs, SVOCs [1,4-dioxane], PCBs, etc.).

4.2.1 Volatile Organic Compounds

Trichloroethene (TCE) and benzene groundwater plumes previously identified in the central and downgradient portions of the MRC are confirmed by the 2015 results, and consistent with earlier results showing TCE and benzene in groundwater at concentrations exceeding the Maryland groundwater standard (i.e., 5 µg/L for each constituent). Tetrachloroethene (PCE), chlorobenzene, and several chlorobenzene compounds also exceed MDE standards, and have formed a small plume in the southwestern portion of Lot D. TCE and benzene results are discussed herein because they are primary indicators of solvent and petroleum VOC contamination, and most frequently exceed groundwater standards at MRC. Chlorinated VOC-degradation daughter products (e.g., dichloroethenes, vinyl chloride [VC], etc.) or other petroleum-related VOCs (e.g., methyl *tert*-butyl ether [MTBE], benzene isomers, naphthalene, etc.) are typically co-located with these primary VOCs.

Chlorinated volatile organic compounds (cVOCs)—TCE results are in Table 4-2 and in Figure 4-3. TCE was detected in shallow groundwater at several areas at concentrations ranging from 0.38*J* µg/L at well MW111A (southwestern portion of MRC, northeast of Tilley Chemical) to 21,800 µg/L at well MW74B (southeastern portion of MRC near the water tank). PCE, another chlorinated solvent and degreaser, was detected less frequently (21% of samples), at concentrations ranging from 0.35*J* µg/L at well MW79B (north side of Block E, south of the vertical-launch system building) to 45.7 µg/L at newly installed well MW113A (southwestern corner of Lot D), with an average detected concentration of 5.74 µg/L. TCE is co-located with detected PCE in all

cases, and PCE exceeds its groundwater standard (5 µg/L) at well MW113A (45.7 µg/L) in the southwestern portion of Block E; wells MW60A (11 µg/L) and MW60B (14.8 µg/L) near the southern end of Building C; wells MW21B (8.4 µg/L) and MW98B (6.1 µg/L) near the former 2,000-gallon waste oil underground storage tank (UST), northeast of the Tilley Chemical building; and well MW16A (9.9 µg/L) in parking Lot 3, southwest of the Drop Hammer Building and Building A.

- *Eastern TCE plume:* The largest contiguous area containing samples with the highest concentrations of TCE in groundwater extends southeast from MW60B (4,070 µg/L) and MW81B (3,010 µg/L) (at the southern end of Building C) to well MW112A (2.5 µg/L) (near Dark Head Cove). Maximum detected TCE concentrations of 21,800 µg/L, 4,070 µg/L, and 3,010 µg/L are reported for wells MW74B, MW60B, and MW81B, respectively. MW74B is in the southeastern portion of the plume, west of the aboveground water tank, whereas wells MW60B and MW81B are south of Building C.

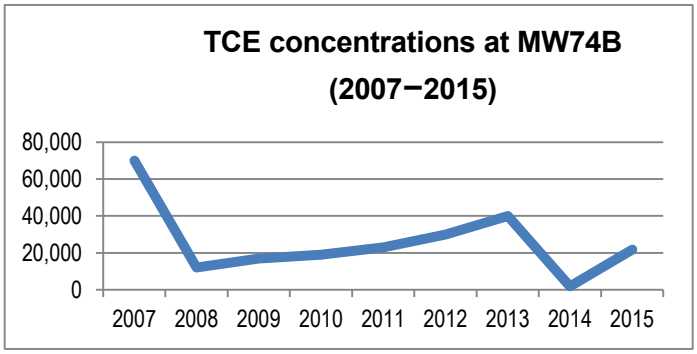
    - The high concentrations at the north and south ends of the eastern plume, with no high concentrations between them, suggest at least two distinct TCE-source areas. A third area of elevated TCE is at well MW27B (1,250 µg/L), but this area is considered an extension of the northern end plume because it is hydraulically downgradient of well MW81B. Its apparent isolation is unlikely to be the result of any other "B-level" wells between MW81B and MW27B.

    - Two of the higher concentrations of TCE detected in the intermediate depth of the surficial aquifer were from wells MW60B and MW81B, screened 30 feet below grade. This plume may originate from the southern end of the Building C Basement (MW60B), or possibly from spills of material handled near MW60B.

    - VOCs in groundwater at wells MW72B and MW74B (near the southern end of the eastern TCE plume) are considered to originate at least in part from a recently discovered TCE-containing underground storage tank. The leaking tank was discovered in 2013 when soil was remediated for the Block E groundwater treatment area. The tank contained full-strength TCE, and was removed from its location near the former Building D foundation. Soil under the tank had been impacted by the TCE in the tank.

    - High TCE concentrations at MW74B over time (shown below) suggest the well was close to non-aqueous source material. Recent remedial actions in this area appear to have lowered the TCE concentration from 2013 to 2014 by a factor of 21, but concentrations rebounded somewhat in 2015:

Date	TCE concentration
2007	70,000
2008	12,000
2009	17,000
2010	19,000
2011	23,000
2012	30,000
2013	40,000
2014	1,900
2015	21,800



Changes in the pumping rates of the multi-phase extraction (MPE) system and resulting shifts in the plume might explain these concentration changes. This area will be subject to *in situ* anaerobic dechlorination after operation of the MPE system is shut down in 2015.

- At both of the eastern TCE-plume source-areas, residual TCE may be trapped in silt and sand lenses in the clay-rich zones, and/or may be adsorbed to organic material and clays. From these source areas, dissolved TCE has presumably been released to groundwater and now moves preferentially to the southeast along the more permeable sandy and silty material that extends from well MW48 southeastward to well MW37.

- *Western TCE plume:* The second largest contiguous area of TCE in groundwater extends from well MW21B (near recognized environmental condition #9, a former 2,000 gallon waste-oil UST) to MW12 (near Cow Pen Creek). The current maximum reported concentrations of TCE in this area are in wells MW111B (1,270 µg/L) and MW70B (1,170 µg/L) in the center of the plume, and in wells MW12A (838 µg/L) and MW12B (777 µg/L) in the southernmost portion of the plume near Cow Pen Creek. Wells MW21B and MW98B (in the northern portion of the plume) had the next highest TCE concentrations (708 µg/L and 554 µg/L, respectively) for the western TCE plume.

- *Other TCE areas:* TCE exceedances of the groundwater standard (5 µg/L) were also detected at the western portion of the facility in wells MW96A-B (3,870 µg/L and 18.5 µg/L, respectively), MW90B (102 µg/L), MW53A (41 µg/L), MW53B (246 µg/L), MW109B (87.2 µg/L), MW110A-B (33 µg/L and 38.8 µg/L), MW50A (11.7 µg/L), and MW17A (15.5 µg/L). The maximum TCE concentration (3,870 µg/L at well MW96A) is west of Building A.

- *Block E southwest:* A TCE exceedance of the groundwater standard (5 µg/L) was detected at the southwestern portion of Lot D (Block E) at well MW113A (23.5 µg/L).

Benzene—Figure 4-4 presents benzene results for the MRC and chlorobenzene-isomer results for wells in the southwestern portion of Lot D (i.e., Tax Block E). The highest concentrations of

benzene would likely be encountered in shallow groundwater near source areas, because fuels in product form are less dense than water and, when present above the solubility limit, will float on top of the groundwater. Recharge (i.e., infiltrating precipitation) and downward hydraulic gradients may drive dissolved benzene and other petroleum-related contaminants downward in the aquifer as the contaminant travels farther from the source area(s). Benzene is biodegradable, so concentrations will reduce over time in the absence of a continuing source.

The area with the highest benzene concentrations above the groundwater standard (5 µg/L) is west of Building A, near underground wastewater lines at wells MW96B (646 µg/L) and MW17A (163 µg/L). Other areas with benzene concentrations above the groundwater standard include:

- well MW109B (123 µg/L), adjacent to MW96A/B
- wells MW53A and MW110B in parking Lot 2, west of Building A (hydraulically downgradient of wells MW96B/MW17)
- well MW21B (29.5 µg/L) and MW111B (7.9 µg/L), southwest of Building A near a former UST and co-located with the western TCE plume
- well MW14B (25.4 µg/L), co-located with the western TCE plume
- well MW77A (14 µg/L), on the east side of the vertical-assembly building in the area of an abandoned-in-place 25,000-gallon fuel oil UST
- well MW114A (6 µg/L), in the southwestern portion of Lot D (Block E)

With one exception, benzene concentrations in wells with benzene exceedances have increased from 2014–2015 in wells west of Building A, at: MW96B (from 470 µg/L in 2014 to 646 µg/L in 2015), MW109B (from 10 µg/L to 123 µg/L), MW110B (from 18 µg/L to 47.4 µg/L), MW53A (from 1.5 µg/L to 10.3 µg/L), and MW17A (from 160 µg/L to 163 µg/L). Benzene concentrations decreased in well MW53B (from 13 µg/L in 2014 to 1.2 µg/L in 2015) in this area. Lesser increases in benzene concentrations occurred in wells MW14B (from 18 µg/L in 2014 to 25.4 µg/L in 2015), MW21B (from 26*J* µg/L to 29.5 µg/L), MW77A (from 11 µg/L to 14 µg/L), and MW114A (not detected to 6 µg/L).

As shown in Figure 4-4 (and Table 4-3), groundwater concentrations of chlorobenzene isomers in the southwestern portion of Lot D (Block E) exceed groundwater standards at wells MW113A and MW114A (groundwater standards for the chlorobenzene and chlorobenzene compounds range

from 1.8–600 µg/L). Chlorobenzene compounds exceeding groundwater standards include chlorobenzene, 1,2,4-trichlorobenzene, and 1,3-dichlorobenzene. These compounds are typically associated with transformer oil, and are detected in wells located downgradient of PCBs found in the saturated soil zone in the southwestern portion of Block E. 1,2-Dichloropropane and several cVOCs (PCE, TCE, 1,2-dichloroethane, and VC) also exceed groundwater standards in these wells.

***Natural-attenuation parameters*—**In addition to the standard analyses for VOCs, the laboratory analyzed groundwater samples from wells within the plumes for several NAA parameters. The NAA analyses include alkalinity, ammonia nitrogen, chloride, nitrate, nitrite, orthophosphate, sulfate, total dissolved solids, total iron, dissolved organic carbon, manganese, and the dissolved gasses ethane, ethene, and methane. NAA parameters were also measured in the field. Field measurements include groundwater pH (a measure of acidity or alkalinity), oxidation-reduction potential (ORP), dissolved oxygen (DO), and temperature. Pre-remediation evaluations of NAA parameters can be found in several MRC groundwater monitoring reports (Tetra Tech, 2012b, 2012c, 2012d, and 2013). These analyses indicate natural (i.e., existing) support for reductive chlorination of VOCs, and these results will help evaluate future remedial action by providing baseline groundwater conditions that can be compared to groundwater enhanced by adding electron donor and/or pH adjustment to stimulate anaerobic reductive-dechlorination. These results will also be used as input for ongoing groundwater-contaminant modeling.

4.2.2 1,4-Dioxane

1,4-Dioxane is a synthetic industrial chemical used primarily as a solvent in paints, varnishes, lacquers, cosmetics, deodorants, semiconductors, electronic components, and detergent preparations. 1,4-Dioxane often has been used with chlorinated solvents as a stabilizer and corrosion inhibitor. 1,4-Dioxane is highly miscible in water, and can be found in groundwater plumes far in advance of any solvents with which it might have entered the subsurface originally. It migrates rapidly in soil, but biodegrades slowly.

As shown in Table 4-2 and Figure 4-5, the SVOC 1,4-dioxane was detected in all 51 groundwater samples in which it was analyzed for in 2015, at concentrations ranging from 0.022*J* µg/L (at MW12C) to 311 µg/L (at MW70B). Concentrations exceeding the screening level of 3 µg/L are shown within contours on Figure 4-5. The average of all 1,4-dioxane detections is 29.36 µg/L

(Table 4-2). The highest concentrations occur primarily in the upper and intermediate surficial-aquifer wells, with the highest reported concentrations (138–311 µg/L) at wells MW70B, MW12A, MW12B, MW14B, MW111B, and MW98B within the western TCE plume in the southwestern portion of the MRC. 1,4-Dioxane concentrations over time have been steady to slightly decreasing in the western TCE plume and at wells outside of the groundwater remedy areas.

1,4-Dioxane was detected in several wells in the western TCE plume, ranging from 0.022*J* µg/L at well MW12C to 311 µg/L at MW70B. 1,4-Dioxane in this area of the MRC extends from well MW91A (near the rear of Building B) to well MW12A-B (adjacent to Cow Pen Creek), with the highest concentrations in a line from just north of the Tilley Chemical building (wells MW98B and MW111B) to Cow Pen Creek. 1,4-Dioxane was also detected at concentrations exceeding its screening level west and southwest of Building A in samples from wells MW53B (14.1 µg/L), MW90B (5.4 µg/L), MW96A (4.3 µg/L), MW53A (4 µg/L), MW110B (3.8 µg/L), and MW17A (3.7 µg/L). Historically, 1,4-dioxane has not been detected extensively in the eastern part of the MRC; exceptions for this round are wells MW113A and MW114A in the southeastern portion of Lot D, where one of two detected concentrations (0.85 µg/L at MW114A) is lower than the screening level (3 µg/L). 1,4-Dioxane exceeds its screening level at MW113A (5.6 µg/L).

4.2.3 Polychlorinated Biphenyls

Groundwater samples for PCB analyses were collected in an area of Block E where elevated PCBs had previously been detected in soil (Figure 4-6). Although PCBs have been found to be widely distributed in soil along the southern one-third of Block E, the primary presence of Aroclor-1260 PCBs in the southwestern and south-central areas of Block E, and the primary presence of Aroclor-1254 PCBs in the southeastern portion of Block E (around the above-ground water tank), indicate that two likely sources or releases of PCBs exist within Block E. Groundwater samples from three wells (MW62A, MW62C, and MW113A) in the southwestern portion of Block E were analyzed for PCB homologs (Tables 4-2 and 4-3).

Homologs are groups of chlorobiphenyls based on the number and location of chlorine atoms in the PCB molecule. Monochlorobipenyls and dichlorobiphenyls, for example, are lower-chain chlorobiphenyls that contain only one and two chlorine atoms (respectively) in their structures. Lower-chain chlorobiphenyls are lighter, generally more soluble in water (i.e., less stable in the

environment), and are considered less toxic than the intermediate- and higher-chain chlorobiphenyls.

Groundwater samples from five wells (MW43A, MW44A, MW103A, MW103B, and MW114A) were analyzed for PCB Aroclors, but they were not detected in these samples and, therefore, are not shown in Tables 4-2 and 4-3 (see Appendix D for PCB Aroclor results). Monochlorobiphenyls were detected in well MW113A (0.011 µg/L), and total trichlorobiphenyls were detected in well MW62A (0.0048*J* µg/L). These concentrations are one to two orders of magnitude (i.e., 10–100 times) lower than the groundwater standard (0.5 µg/L). PCB results for MW113A indicate that higher-chain chlorobiphenyls are not migrating in groundwater from the source area near well MW43A.

4.2.4 Metals

Total metals (i.e., unfiltered) concentrations above MDE standards are found throughout the MRC (previous site-wide plots of beryllium, cobalt, and nickel can be found in Tetra Tech [2009]). Table 4-3 summarizes detections of metals in the groundwater samples. Table 4-4 includes a statistical summary of metals in site groundwater that exceed Maryland groundwater standards.

Concentrations of 12 metals exceed Maryland groundwater standards in one or more samples. Manganese (99%), iron (87%), and nickel (64%) exceed their standards most frequently, with maximum concentrations more than two orders of magnitude (greater than 100 times) above their respective groundwater standards (Table 4-4). Concentrations of beryllium, vanadium, and cadmium exceed their standards in 42%, 33%, and 13% of samples, respectively, and their maximum concentrations (300 µg/L, 130 µg/L, and 10 µg/L, respectively) exceed groundwater standards by approximately two times (for cadmium) to more than 10 times (i.e., one order of magnitude, for beryllium and vanadium). Concentrations of the remaining metals (arsenic, selenium, lead, chromium, copper, and barium) exceed standards in two or fewer samples (in 1–2% of samples collected); all concentrations (except those for lead) exceed standards by a factor of approximately five or less. The lead concentration is approximately six times its standard.

4.2.5 Perchlorate

As shown in Table 4-2 and Figure 4-7, perchlorate was detected in 13 (52%) of 25 groundwater samples in which it was analyzed for. Detected concentrations of perchlorate range from

0.14*J* µg/L (MW74A) to 4.1 µg/L (MW53B), but only three concentrations (4.1 µg/L at MW53B, and 3.6 µg/L at MW96B and MW01A) exceed its groundwater standard (2.6 µg/L). The low concentrations and few groundwater exceedances for perchlorate in MRC wells are consistent with previous sampling results. One of the exceedances is at a background well (MW01A) near Eastern Boulevard. The higher concentrations of perchlorate at wells MW53B, MW96B, and MW110B are west of Building A, in the western portion of the MRC where elevated concentrations of VOCs (i.e., TCE and benzene) are also present. A low (non-exceedance) concentration of perchlorate was detected in newly installed well MW113A (0.17*J* µg/L) in the southwestern portion of Lot D (Block E).

Concentrations of perchlorate only slightly exceed the groundwater standard and are limited to wells in the TCE areas west of Building A (wells MW53A and MW96B). Concentrations of perchlorate over time in this area have been stable, and perchlorate has not been detected in downgradient wells (MW08A and MW08B). Groundwater samples from wells site-wide were collected for perchlorate analysis from 2009–2015, and wells in areas of elevated TCE concentrations (e.g., MW14A/B, MW53A/B, MW60A/B, MW74A/B, MW96A/B) have been sampled. Perchlorate exceedances of the MDE groundwater standard (2.6 µg/L) were detected only at the TCE areas west of Building A (wells MW53A and MW96B) and at a background location (MW01A). Perchlorate is not a contaminant of concern in the groundwater risk assessment and data on its concentrations are not required to assess the groundwater remedy effectiveness. Therefore, we recommend discontinuing perchlorate analysis in future groundwater sampling at MRC.

Table 4-1

Groundwater Levels and Elevations-March 31-April 1, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Well ID	Elevation - top of well casing NAVD 1988 (feet)	Depth to groundwater - below top of casing (feet)	Groundwater elevation NAVD 1988 (feet)
MRC-MW01A	33.63	12.18	21.45
MRC-MW02A	28.41	6.37	22.04
MRC-MW03A	28.17	2.63	25.54
MRC-MW04A	24.43	2.47	21.96
MRC-MW05A	35.15	12.76	22.39
MRC-MW08A	9.70	0.00	9.70
MRC-MW08B	9.57	-3.00	12.57
MRC-MW09A	8.26	0.50	7.76
MRC-MW10A	9.52	0.00	9.52
MRC-MW11A	11.90	1.44	10.46
MRC-MW11C	11.45	1.08	10.37
MRC-MW15A	16.80	0.68	16.12
MRC-MW16A	17.20	1.41	15.79
MRC-MW17A	32.59	6.62	25.97
MRC-MW19A	36.36	6.40	29.96
MRC-MW20A	36.18	9.50	26.68
MRC-MW21A	32.70	2.30	30.40
MRC-MW21B	32.91	8.03	24.88
MRC-MW24A	20.77	7.44	13.33
MRC-MW25A	26.71	12.40	14.31
MRC-MW26A	22.90	9.80	13.10
MRC-MW27A	20.76	9.06	11.70
MRC-MW27B	20.90	12.19	8.71
MRC-MW27C	21.35	12.90	8.45
MRC-MW28A	17.45	7.40	10.05
MRC-MW29A	13.97	5.10	8.87
MRC-MW30A	11.14	0.50	10.64
MRC-MW31A	11.00	2.75	8.25
MRC-MW32A	11.01	3.32	7.69
MRC-MW33A	11.08	2.05	9.03
MRC-MW34A	10.88	4.30	6.58
MRC-MW34B	10.84	3.91	6.93
MRC-MW34C	10.80	3.35	7.45
MRC-MW37A	10.50	8.34	2.16

Table 4-1

Groundwater Levels and Elevations-March 31-April 1, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Well ID	Elevation - top of well casing NAVD 1988 (feet)	Depth to groundwater - below top of casing (feet)	Groundwater elevation NAVD 1988 (feet)
MRC-MW37B	7.36	5.90	1.46
MRC-MW37C	7.45	5.37	2.08
MRC-MW38A	8.07	4.35	3.72
MRC-MW38B	8.18	4.60	3.58
MRC-MW39A	4.78	0.92	3.86
MRC-MW42A	28.21	10.19	18.02
MRC-MW43A	11.01	1.05	9.96
MRC-MW44A	10.64	0.75	9.89
MRC-MW45A	4.64	1.40	3.24
MRC-MW46A	6.40	4.67	1.73
MRC-MW47A	10.75	3.23	7.52
MRC-MW49A	31.47	10.30	21.17
MRC-MW50A	30.15	13.80	16.35
MRC-MW51A	21.88	2.17	19.71
MRC-MW52A	20.32	5.84	14.48
MRC-MW53A	18.54	3.70	14.84
MRC-MW53B	18.41	3.72	14.69
MRC-MW54A	17.05	3.53	13.52
MRC-MW55A	36.56	12.67	23.89
MRC-MW57A	36.46	4.05	32.41
MRC-MW59A	34.11	6.05	28.06
MRC-MW61A	24.16	4.50	19.66
MRC-MW62A	10.62	0.80	9.82
MRC-MW62C	10.89	2.40	8.49
MRC-MW64A	30.88	6.25	24.63
MRC-MW65A	14.76	3.35	11.41
MRC-MW66A	14.99	4.58	10.41
MRC-MW67A	36.67	18.65	18.02
MRC-MW68A	36.51	11.40	25.11
MRC-MW71A	16.90	1.50	15.40
MRC-MW71B	16.94	0.97	15.97
MRC-MW72B	10.79	7.86	2.93
MRC-MW73B	10.28	7.68	2.60
MRC-MW77A	23.06	6.40	16.66

Table 4-1

Groundwater Levels and Elevations-March 31-April 1, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Well ID	Elevation - top of well casing NAVD 1988 (feet)	Depth to groundwater - below top of casing (feet)	Groundwater elevation NAVD 1988 (feet)
MRC-MW79B	19.18	8.95	10.23
MRC-MW80A	32.82	5.01	27.81
MRC-MW80B	32.66	6.85	25.81
MRC-MW83A	20.14	0.00	20.14
MRC-MW84A	20.20	0.00	20.20
MRC-MW85A	18.66	4.20	14.46
MRC-MW86A	23.62	3.40	20.22
MRC-MW86B	23.72	3.36	20.36
MRC-MW87A	26.57	11.20	15.37
MRC-MW87B	26.54	11.53	15.01
MRC-MW88A	24.47	3.46	21.01
MRC-MW88B	24.40	3.52	20.88
MRC-MW90B	21.67	6.50	15.17
MRC-MW91A	36.85	9.05	27.80
MRC-MW91B	36.54	20.90	15.64
MRC-MW93A	32.05	9.80	22.25
MRC-MW93B	31.97	10.90	21.07
MRC-MW94B	25.28	4.07	21.21
MRC-MW95B	24.04	3.73	20.31
MRC-MW96A	30.87	12.05	18.82
MRC-MW96B	30.85	15.15	15.70
MRC-MW101A	27.29	14.57	12.72
MRC-MW101B	27.25	14.17	13.08
MRC-MW102A	21.63	9.80	11.83
MRC-MW102B	21.58	10.90	10.68
MRC-MW104A	8.19	5.30	2.89
MRC-MW104B	8.23	5.97	2.25
MRC-MW105A	9.66	4.40	5.26
MRC-MW105B	9.64	4.85	4.79
MRC-MW109A	31.22	12.90	18.32
MRC-MW109B	31.24	15.80	15.44
MRC-MW110A	16.21	2.71	13.50
MRC-MW110B	16.09	2.43	13.66
MRC-MW112A	4.96	4.02	0.94

Table 4-1

Groundwater Levels and Elevations-March 31-April 1, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Well ID	Elevation - top of well casing NAVD 1988 (feet)	Depth to groundwater - below top of casing (feet)	Groundwater elevation NAVD 1988 (feet)
MRC-MW113A	11.89	1.63	10.26
MRC-MW114A	11.79	2.05	9.74
MRC-MW115A	26.83	5.75	21.08
MRC-MW116A	25.86	4.70	21.16

MRC - Middle River Complex
MW - monitoring well
NAVD - North American Vertical Datum
A - upper surficial aquifer
B - intermediate surficial aquifer
C - lower surficial aquifer

Table 4-2

Statistical Summary of Analytes Detected in Groundwater Samples-2015
Lockheed Martin Middle River Complex, Middle River, Maryland
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Parameter	Frequency of detection	Percent frequency of detection	Minimum non-detect result	Maximum non-detect result	Minimum detected result	Maximum detected result	Sample with maximum detected concetration	Average of positive results	Average of all results	Standard deviation
Volatile organic compounds (µg/L)										
TRICHLOROETHENE	68/96	71	0.22 U	1 U	0.38 J	21800	MRC-MW-74B-051315	652	462	2308
CIS-1,2-DICHLOROETHENE	62/96	65	0.3 U	1 U	0.33 J	47400	MRC-MW-96A-051115	1137	734	4976
1,1-DICHLOROETHENE	47/96	49	0.29 U	1 U	0.3 J	480	MRC-MW-81B-042215	64.3	31.6	89.9
VINYL CHLORIDE	38/96	40	0.3 U	1 U	0.245	560	MRC-MW-81B-052215	32.1	12.9	62.4
BENZENE	36/96	38	0.2 U	58 U	0.21 J	646	MRC-MW-96B-051115	30.8	12.0	68.9
1,1-DICHLOROETHANE	35/96	36	0.2 U	50 U	0.33 J	137	MRC-MW-98B-051815	16.8	6.5	20.0
TRANS-1,2-DICHLOROETHENE	21/96	22	0.26 U	50 U	0.34 J	122	MRC-MW-81B-042215	15.1	3.7	16.6
TETRACHLOROETHENE	20/96	21	0.3 U	52 U	0.35 J	45.7	MRC-MW-113A-042715	5.74	1.66	5.67
CYCLOHEXANE	15/91	16	0.29 U	1 U	0.3 J	37.9	MRC-MW-17A-050515	4.25	0.89	4.18
CHLOROMETHANE	14/96	15	0.21 U	73 U	0.2575	0.57 J	MRC-MW-90B-051815	0.37	0.64	3.70
1,4-DIOXANE	8/66	12	58.9 U	320 U	60.6 J	290 J	MRC-MW14B-062415	138	62	60
1,1,2-TRICHLOROETHANE	11/91	12	0.33 U	1 U	0.34 J	2.4	MRC-MW-111B-051815	1.31	0.37	0.45
METHYL TERT-BUTYL ETHER	11/96	11	0.29 U	33 U	1.9	117	MRC-MW-77B-042115	24.4	3.2	13.4
ACETONE	11/96	11	1.3 U	160 U	3.5 J	57.3	MRC-MW-57A-042415	14.3	4.9	10.5
ISOPROPYLBENZENE	10/96	10	0.2 U	58 U	0.25 J	14	MRC-MW-21B-051415	3.74	0.87	3.51
CHLOROFORM	10/96	10	0.21 U	42 U	0.35 J	9.9	MRC-MW-38A-042715	2.31	0.65	2.43
TOLUENE	9/96	9.4	0.2 U	38 U	0.29 J	44.7	MRC-MW-17A-050515	6.30	0.98	4.95
CARBON DISULFIDE	9/96	9.4	0.22 U	63 U	0.27 J	2.4	MRC-MW-48A-051315	0.86	0.59	3.20
O-XYLENE	7/96	7.3	0.2 U	42 U	0.38 J	103	MRC-MW-96B-051115	17.5	1.7	10.7
TRICHLOROFLUOROMETHANE	6/96	6.3	0.2 U	82 U	0.45 J	1010	MRC-MW-113A-042715	196	13	102
1,2-DICHLOROETHANE	6/96	6.3	0.32 U	38 U	0.36 J	903	MRC-MW-114A-041415	152	10	92
CHLOROBENZENE	6/96	6.3	0.19 U	42 U	0.26 J	366	MRC-MW-114A-041415	67.9	4.6	37.5
METHYLENE CHLORIDE	6/96	6.3	0.45 U	55 U	0.45 J	9.1	MRC-MW-98B-051815	2.39	0.71	2.92
BROMOMETHANE	6/96	6.3	0.29 UJ	73 U	0.41 J	0.66 J	MRC-MW-116A-042215	0.550	0.656	3.70
METHYL CYCLOHEXANE	5/91	5.5	0.3 U	1 U	0.31 J	16	MRC-MW-17A-050515	3.61	0.42	1.66
M+P-XYLENES	5/96	5.2	0.33 U	40 U	0.64 J	60.4	MRC-MW-96B-051115	19.9	1.7	7.3
1,4-DICHLOROBENZENE	5/96	5.2	0.2 U	45 U	0.36 J	49.2	MRC-MW-114A-041415	17.8	1.4	6.6
ETHYLBENZENE	5/96	5.2	0.2 U	42 U	0.58 J	64.7	MRC-MW-17A-050515	15.8	1.3	7.0
1,1,2-TRICHLOROTRIFLUOROETHANE	4/96	4.2	0.26 U	75 U	0.89 J	106	MRC-MW-74B-051315	27.3	1.7	11.4
1,1,1-TRICHLOROETHANE	4/96	4.2	0.22 U	73 U	0.66 J	41.7	MRC-MW-98B-051815	11.3	1.1	5.6
1,2,4-TRICHLOROBENZENE	3/96	3.1	0.23 U	53 U	0.95 J	260	MRC-MW-114A-041415	131	5	30
2-BUTANONE	3/96	3.1	0.81 U	88 U	2.6 J	138	MRC-MW14B-062415	48.5	3.8	14.6
1,3-DICHLOROBENZENE	3/96	3.1	0.2 U	32 U	0.33 J	17.5	MRC-MW-113A-042715	7.56	0.61	2.42
CARBON TETRACHLORIDE	3/96	3.1	0.31 U	72 U	0.5 J	2.9	MRC-MW-34B-041315	1.44	0.66	3.66
1,2,3-TRICHLOROBENZENE	2/96	2.1	0.82 U	62 U	43	97	MRC-MW-114A-041415	70.1	2.4	11.1
CHLOROETHANE	2/96	2.1	0.24 U	53 U	7	40.1	MRC-MW-98B-051815	23.6	1.0	4.9
1,2-DICHLOROBENZENE	2/96	2.1	0.21 U	42 U	13.5	17.4	MRC-MW-114A-041415	15.5	0.8	3.0
1,2-DICHLOROPROPANE	1/96	1	0.2 U	42 U	6.4	6.4	MRC-MW-114A-041415	6.40	0.49	2.21
DICHLORODIFLUOROMETHANE	1/96	1	0.33 U	53 U	1	1	MRC-MW-02A-051115, MRC-MW-02A-051115-D	1.00	0.53	2.68
Volatile gases (µg/L)										
ETHANE	6/15	40	0.23 U	3.3 U	0.24 J	41.9	MRC-MW-48A-051315	8.3	3.8	10.6
ETHENE	5/15	33	0.11 U	2.4 U	0.4 J	52.6	MRC-MW-48A-051315	12.4	4.5	13.4
METHANE	12/15	80	0.34 U	1.5 U	6.1	6160	MRC-MW-48A-051315	845	676	1595

Table 4-2

Statistical Summary of Analytes Detected in Groundwater Samples-2015
Lockheed Martin Middle River Complex, Middle River, Maryland
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Parameter	Frequency of detection	Percent frequency of detection	Minimum non-detect result	Maximum non-detect result	Minimum detected result	Maximum detected result	Sample with maximum detected concetration	Average of positive results	Average of all results	Standard deviation
Semivolatile organic compounds (µg/L)										
1,4-DIOXANE	51/51	100	--	--	0.022 J	311	MRC-MW-70B-062515	29.4	29.4	64.7
Polychlorinated biphenyl homologs (µg/L)										
MONOCHLOROBIPHENYLS	1/3	33	0.0017 U	0.0029 U	0.006225	0.011	MRC-MW-113A-042715-D	0.006225	0.002641	0.003103
TRICHLOROBIPHENYLS	1/3	33	0.0034 U	0.0034 U	0.0048 J	0.0048 J	MRC-MW-62A-041315	0.0048	0.00325	0.00219
Total metals (µg/L)										
ANTIMONY	11/79	14	0.304 U	2.2 U	0.78 J	5.6	MRC-MW-11A-041715	2.08	0.803	0.825
ARSENIC	35/79	44	0.359 U	3 U	1.1 J	41	MRC-MW-93A-051415	4.1	2.232	4.90
BARIUM	79/79	100	--	--	27	2300	MRC-MW-68A-050515	264	264	349
BERYLLIUM	62/79	78	0.3 U	1 U	0.09 J	300	MRC-MW-67A-050515	15.3	12.077	41.3
CADMIUM	23/79	29	0.021 U	1.1 U	0.36 J	10 J	MRC-MW-68A-050515	2.14	0.829	1.61
CHROMIUM	60/79	76	0.476 U	2.2 U	0.78 J	180	MRC-MW-93A-051415	5.4	4.240	20.14
COBALT	76/79	96	1.9 U	1.9 U	1.9 J	8600	MRC-MW-67A-050515	428	412	1160
COPPER	61/79	77	1.9 U	5.6 U	0.354 J	2000	MRC-MW-67A-050515	59.2	46.0	228
IRON	75/79	95	23 U	92 U	24 J	236000	MRC-MW-93A-051415	28480	27039	43742
LEAD	30/79	38	0.271 U	2.2 U	0.83 J	86	MRC-MW-93A-051415	5.60	2.476	9.75
MANGANESE	79/79	100	--	--	14	45900	MRC-MW-08A-041615	5665	5665	8653
MERCURY	2/74	3	0.04 U	0.5 U	0.23 J	0.43 J	MRC-MW-53A-041615	0.33	0.137	0.087
MOLYBDENUM	9/79	11	0.103 U	2.7 U	0.79 J	15	MRC-MW-93A-051415	3.98	1.027	1.96
NICKEL	78/79	99	1.9 U	1.9 U	3.4 J	14200	MRC-MW-67A-050515	556	549	1788
POTASSIUM	3/3	10	--	--	5450	15300	MRC-MW-62C-041315	9330	9330	5247
SELENIUM	23/79	29	0.177 U	5.6 U	0.233 J	120	MRC-MW-93A-051415	11.9	4.544	13.89
SILVER	3/79	4	0.062 U	2.2 U	0.76 J	0.9 J	MRC-MW-49A-042415	0.843	0.597	0.354
THALLIUM	9/79	11	0.024 U	1 U	0.279 J	1.7	MRC-MW-67A-050515	0.722	0.309	0.260
VANADIUM	40/79	51	0.432 U	2.2 U	0.58	130	MRC-MW-93A-051415	7.00	3.83	14.86
Miscellaneous parameters (µg/L)										
PERCHLORATE	13/25	52	0.06 U	0.06 U	0.14 J	4.1	MRC-MW-53B-041615	1.507	0.798	1.28
Miscellaneous parameters (mg/L)										
ALKALINITY	14/14	100	--	--	3 J	527	MRC-MW14B-062415	88.7	88.7	138
AMMONIA-N	10/15	67	0.054 U	0.14 U	0.034 J	1.6	MRC-MW-27A-042115	0.444	0.311	0.445
CHLORIDE	15/15	100	--	--	11.1	726	MRC-MW-27A-042115	171	171	213
DISSOLVED ORGANIC CARBON	15/15	100	--	--	0.32 J	55.3	MRC-MW-81B-051115	6.82	6.82	14.2
NITRATE-N	6/15	40	0.037 U	0.5 U	0.15 J	6.7	MRC-MW-37A-050415	1.48	0.684	1.68
ORTHOPHOSPHATE	7/14	50	0.0025 U	0.02 U	0.003 J	0.052	MRC-MW-37B-050415	0.021	0.013	0.014
SILICON DIOXIDE	1/1	100	--	--	8.5	8.5	MRC-MW-34B-041315	8.50	8.50	
SULFATE	15/15	100	--	--	0.85 J	241	MRC-MW-37A-050415	36.5	36.5	65.9
TOTAL DISSOLVED SOLIDS	14/14	100	--	--	82	1270	MRC-MW14B-062415	498	498	393
TOTAL ORGANIC CARBON	9/9	100	--	--	1	471	MRC-MW14B-062415	85.9	85.9	151.2

1 Includes results from duplicate (-D) analyses

-- not applicable because analyte was detected in all samples.

J - chemical detected, concentration is estimated due to technical non-compliance

µg/L - micrograms per liter

mg/L - milligrams per liter

U - not detected (concentration shown is detection limit)

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B	MRC-MW07A	MRC-MW08A
SAMPLE ID	MDE Groundwater Standard[1,2]	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015	MRC-MW-07A-051215	MRC-MW-08A-041615
SAMPLE DATE		20150430	20150506	20150511	20150511	20150511	20150430	20150512	20150416
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	NA	--	--	--	NA	NA	--
1,1,2-TRICHLOROETHANE	5	NA	NA	--	--	--	NA	NA	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	--	--	--	NA	NA	--
1,1-DICHLOROETHANE	90	NA	NA	--	--	--	NA	NA	--
1,1-DICHLOROETHENE	7	NA	NA	--	--	--	NA	NA	--
1,2,3-TRICHLOROBENZENE	NA	NA	NA	--	--	--	NA	NA	--
1,2,4-TRICHLOROBENZENE	70	NA	NA	--	--	--	NA	NA	--
1,2-DICHLOROBENZENE	600	NA	NA	--	--	--	NA	NA	--
1,2-DICHLOROETHANE	5	NA	NA	--	--	--	NA	NA	--
1,2-DICHLOROPROPANE	5	NA	NA	--	--	--	NA	NA	--
1,3-DICHLOROBENZENE	1.8	NA	NA	--	--	--	NA	NA	--
1,4-DICHLOROBENZENE	75	NA	NA	--	--	--	NA	NA	--
1,4-DIOXANE	3	NA	NA	--	--	--	NA	NA	--
2-BUTANONE	700	NA	NA	--	--	--	NA	NA	--
ACETONE	550	NA	NA	--	--	--	NA	NA	--
BENZENE	5	NA	NA	--	--	--	NA	NA	--
BROMOMETHANE	0.85	NA	NA	--	--	--	NA	NA	--
CARBON DISULFIDE	100	NA	NA	--	--	--	NA	NA	--
CARBON TETRACHLORIDE	5	NA	NA	--	--	--	NA	NA	--
CHLOROBENZENE	100	NA	NA	--	--	--	NA	NA	--
CHLOROETHANE	3.6	NA	NA	--	--	--	NA	NA	--
CHLOROFORM	80	NA	NA	--	--	--	NA	NA	--
CHLOROMETHANE	19	NA	NA	--	--	--	NA	NA	--
CIS-1,2-DICHLOROETHENE	70	NA	NA	--	--	--	NA	NA	--
CYCLOHEXANE	NA	NA	NA	--	--	--	NA	NA	--
DICHLORODIFLUOROMETHANE	NA	NA	NA	1	1	1	NA	NA	--
ETHYLBENZENE	700	NA	NA	--	--	--	NA	NA	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	NA	NA	--	--	--	NA	NA	--
M+P-XYLENES	NA	NA	NA	--	--	--	NA	NA	--
METHYL CYCLOHEXANE	NA	NA	NA	--	--	--	NA	NA	--
METHYL TERT-BUTYL ETHER	20	NA	NA	--	--	--	NA	NA	--
METHYLENE CHLORIDE	5	NA	NA	--	--	--	NA	NA	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	--	--	--	NA	NA	--
TETRACHLOROETHENE	5	NA	NA	--	--	--	NA	NA	--
TOLUENE	1000	NA	NA	--	--	--	NA	NA	--
TRANS-1,2-DICHLOROETHENE	100	NA	NA	--	--	--	NA	NA	--
TRICHLOROETHENE	5	NA	NA	--	--	--	NA	NA	--

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION	MDE Groundwater Standard[1,2]	EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B	MRC-MW07A	MRC-MW08A
SAMPLE ID		EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015	MRC-MW-07A-051215	MRC-MW-08A-041615
SAMPLE DATE		20150430	20150506	20150511	20150511	20150511	20150430	20150512	20150416
TRICHLOROFLUOROMETHANE	NA	NA	NA	4.5	4.5	4.5	NA	NA	--
VINYL CHLORIDE	2	NA	NA	--	--	--	NA	NA	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	1.2	NA	NA	NA	NA	NA	3.2	0.33
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	NA	--	--	--	--	--	--
ARSENIC	10	NA	NA	1.2 J	1.15	1.1 J	--	3.2	--
BARIUM	2000	NA	NA	130	130	130	410	59	150
BERYLLIUM	4	NA	NA	6.3	6.3	6.3	--	0.39 J	0.74 J
CADMIUM	5	NA	NA	--	--	--	1.4 J	0.98 J	--
CHROMIUM	100	NA	NA	2.1 J	2.1	2.1 J	1.4 J	1.8 J	2 J
COBALT	NA	NA	NA	110	110	110	120 J	41	110
COPPER	1300	NA	NA	110	110	110	44 J	19	3.5 J
IRON	300	NA	NA	310	300	290	380	66 J	47400
LEAD	15	NA	NA	--	--	--	--	--	1.2 J
MANGANESE	50	NA	NA	57	56.5	56	2000 J	440	45900
MERCURY	2	NA	NA	--	--	--	--	--	--
MOLYBDENUM	NA	NA	NA	--	--	--	1.7 J	--	--
NICKEL	73	NA	NA	150	150	150	140 J	200	260
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	--	--	--	--	2.2 J	--
SILVER	100	NA	NA	--	--	--	--	--	--
THALLIUM	2	NA	NA	--	--	--	0.36 J	--	--
VANADIUM	3.7	NA	NA	2.2 J	2.2	2.2 J	--	--	1.6 J
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B	MRC-MW07A	MRC-MW08A
SAMPLE ID	MDE Groundwater Standard[1,2]	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015	MRC-MW-07A-051215	MRC-MW-08A-041615
SAMPLE DATE		20150430	20150506	20150511	20150511	20150511	20150430	20150512	20150416
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	3.6	NA	NA	NA	NA	NA	--
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	--	--	--	1.8	1.5	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	--	--	--	--	--
1,1-DICHLOROETHANE	90	--	3.6	--	25.3	20.5	--	0.33 J	1.2
1,1-DICHLOROETHENE	7	--	19	--	178	161	--	2.3	1.9
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	--	--	--	--
1,2-DICHLOROBENZENE	600	--	--	--	--	--	--	--	--
1,2-DICHLOROETHANE	5	--	--	--	--	--	--	--	--
1,2-DICHLOROPROPANE	5	--	--	--	--	--	--	--	--
1,3-DICHLOROBENZENE	1.8	--	--	--	--	--	--	--	--
1,4-DICHLOROBENZENE	75	--	--	--	--	--	--	--	--
1,4-DIOXANE	3	--	--	--	133 J	105 J	--	--	--
2-BUTANONE	700	--	--	--	--	--	--	--	--
ACETONE	550	--	--	--	--	--	--	--	--
BENZENE	5	--	--	--	4	4	--	0.31 J	--
BROMOMETHANE	0.85	--	--	--	--	--	--	--	--
CARBON DISULFIDE	100	--	--	--	0.38 J	--	--	--	--
CARBON TETRACHLORIDE	5	--	--	--	--	--	--	--	--
CHLOROBENZENE	100	--	--	--	--	--	--	--	--
CHLOROETHANE	3.6	--	--	--	--	--	--	--	--
CHLOROFORM	80	--	--	--	--	--	--	--	--
CHLOROMETHANE	19	--	--	--	--	--	--	--	--
CIS-1,2-DICHLOROETHENE	70	0.38 J	3.5	--	100	80.4	--	1.2	20.6
CYCLOHEXANE	NA	--	--	--	--	--	--	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	--	--	--	--
ETHYLBENZENE	700	--	--	--	--	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	--	--	--	--
M+P-XYLENES	NA	--	--	--	--	--	--	--	--
METHYL CYCLOHEXANE	NA	--	--	--	--	--	--	--	--
METHYL TERT-BUTYL ETHER	20	--	--	--	--	--	--	--	--
METHYLENE CHLORIDE	5	--	--	--	--	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	--	--	--	--
TETRACHLOROETHENE	5	--	--	--	1.1	0.86 J	--	--	--
TOLUENE	1000	--	--	--	--	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	--	--	--	--	--	4.8
TRICHLOROETHENE	5	--	5.2	--	838	777	--	16.8	7.1 J

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	--	--	--	--
VINYL CHLORIDE	2	--	0.76 J	--	2.8	0.56 J	--	0.31 J	0.41 J
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	--	--	NA	NA	NA
ETHENE	NA	NA	NA	NA	0.4 J	--	NA	NA	NA
METHANE	NA	NA	NA	NA	27.4	22.6	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	0.88	4.3 J	0.034 J	202	162	0.022 J	2.1	6.2
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	5.6	NA	--	--	NA	NA	--
ARSENIC	10	2.2 J	--	NA	1.6 J	--	NA	NA	--
BARIUM	2000	72	41	NA	150	160	NA	NA	140
BERYLLIUM	4	0.35 J	--	NA	1 J	--	NA	NA	--
CADMIUM	5	--	--	NA	--	--	NA	NA	--
CHROMIUM	100	2.9	3	NA	2.1 J	--	NA	NA	1.3 J
COBALT	NA	56	26	NA	68	48	NA	NA	24
COPPER	1300	2 J	4.4 J	NA	2.5 J	--	NA	NA	2.4 J
IRON	300	67600	12300	NA	62200	52500	NA	NA	26400
LEAD	15	1.1 J	6.2	NA	4.1	--	NA	NA	--
MANGANESE	50	5400	2800	NA	3500	3000	NA	NA	1800
MERCURY	2	--	--	NA	--	--	NA	NA	--
MOLYBDENUM	NA	--	--	NA	--	--	NA	NA	--
NICKEL	73	9.4	12	NA	120	90	NA	NA	24
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	--	NA	--	--	NA	NA	2.3 J
SILVER	100	--	--	NA	--	--	NA	NA	--
THALLIUM	2	--	--	NA	--	--	NA	NA	--
VANADIUM	3.7	3.4	4.8	NA	1.6 J	--	NA	NA	--
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	26	29	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	0.43	0.16	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	56.1	36.6	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	--	--	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	0.03	0.023	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	123	64.1	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	330	194	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	6	2.9	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	NA	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	1.9	--	NA	--	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	NA	--	--	--	--	1.1
1,1-DICHLOROETHANE	90	37.5	--	NA	41.6	--	2.1	2.1	15.9
1,1-DICHLOROETHENE	7	156	--	NA	122	--	--	1.8	195
1,2,3-TRICHLOROBENZENE	NA	--	--	NA	--	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	NA	--	--	--	--	--
1,2-DICHLOROBENZENE	600	--	--	NA	--	--	--	--	--
1,2-DICHLOROETHANE	5	3.1	--	NA	0.36 J	0.92 J	--	--	--
1,2-DICHLOROPROPANE	5	--	--	NA	--	--	--	--	--
1,3-DICHLOROBENZENE	1.8	--	--	NA	--	--	--	--	--
1,4-DICHLOROBENZENE	75	--	--	NA	--	--	--	--	--
1,4-DIOXANE	3	290 J	--	NA	63.1 J	--	--	--	--
2-BUTANONE	700	138	--	NA	--	2.6 J	--	--	--
ACETONE	550	--	--	NA	--	--	--	--	--
BENZENE	5	25.4	--	NA	0.99 J	163	--	--	29.5
BROMOMETHANE	0.85	--	--	NA	--	--	--	--	--
CARBON DISULFIDE	100	1.5	--	NA	--	--	--	--	--
CARBON TETRACHLORIDE	5	--	--	NA	--	--	--	--	--
CHLOROBENZENE	100	--	--	NA	--	--	--	--	--
CHLOROETHANE	3.6	--	--	NA	--	--	--	--	--
CHLOROFORM	80	--	--	NA	--	--	0.51 J	--	0.35 J
CHLOROMETHANE	19	--	--	NA	--	--	--	--	--
CIS-1,2-DICHLOROETHENE	70	859	--	NA	16.7	2	--	--	7.2
CYCLOHEXANE	NA	0.3 J	--	NA	0.51 J	37.9	--	--	1.1
DICHLORODIFLUOROMETHANE	NA	--	--	NA	--	--	--	--	--
ETHYLBENZENE	700	--	--	NA	--	64.7	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	0.48 J	--	NA	--	4.4	--	--	14
M+P-XYLENES	NA	--	--	NA	--	35.4	--	--	--
METHYL CYCLOHEXANE	NA	--	--	NA	0.49 J	16	--	--	--
METHYL TERT-BUTYL ETHER	20	--	--	NA	--	--	--	--	--
METHYLENE CHLORIDE	5	1.2	--	NA	--	--	0.45 J	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	NA	--	5	--	--	--
TETRACHLOROETHENE	5	--	--	NA	9.9	--	--	0.37 J	8.4
TOLUENE	1000	--	--	NA	--	44.7	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	NA	--	--	--	--	--
TRICHLOROETHENE	5	2	--	NA	28.5	15.5	--	1.7	708

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
TRICHLOROFLUOROMETHANE	NA	--	--	NA	--	--	0.7 J	--	--
VINYL CHLORIDE	2	2.6	--	NA	17.3	0.53 J	--	--	0.76 J
Volatile gases (µg/L)									
ETHANE	NA	0.24 J	NA	NA	NA	NA	NA	NA	--
ETHENE	NA	0.8 J	NA	NA	NA	NA	NA	NA	--
METHANE	NA	1110	NA	NA	NA	NA	NA	NA	16.8
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	156	0.039 J	16.4	68.6	3.7	6.6	1.5	47.1
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	--	--	--	--	--	--
ARSENIC	10	9.9	--	1.4 J	--	1.2 J	--	2.7 J	--
BARIUM	2000	280	58	120	270	350	27	53	100
BERYLLIUM	4	0.4 J	--	--	8.6	0.38 J	3.2	0.54 J	0.67 J
CADMIUM	5	--	--	--	1.6	--	2	--	--
CHROMIUM	100	3.8	6.4 J	0.97 J	1.1 J	--	0.93 J	4.2	--
COBALT	NA	110	7.2 J	27	370	63 J	1100	5.9	81
COPPER	1300	5.2 J	2.7 J	2.2 J	7.6	3.5 J	240	4.2 J	--
IRON	300	215000	7500	23300	10700	65900	110	5700	29200
LEAD	15	2.6	1.7 J	--	0.83 J	--	0.84 J	1.4 J	--
MANGANESE	50	7000	910 J	4300	5900	8200 J	3000	740	3400
MERCURY	2	--	--	--	--	--	NA	--	--
MOLYBDENUM	NA	--	--	--	--	--	--	0.93 J	--
NICKEL	73	160	13 J	6.9	360	77 J	1500	6.9	83
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	--	--	--	--	4.2 J	--	--
SILVER	100	--	--	--	--	--	--	--	--
THALLIUM	2	--	--	--	--	--	--	--	--
VANADIUM	3.7	10	6.1 J	--	1.2 J	--	0.8 J	5.1	--
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	--	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	527	NA	NA	NA	NA	NA	NA	43
AMMONIA-N	NA	0.46	NA	NA	NA	NA	NA	NA	--
CHLORIDE	NA	83	NA	NA	NA	NA	NA	NA	74.1
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	0.38 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	--	NA	NA	NA	NA	NA	NA	--
ORTHOPHOSPHATE	NA	0.02	NA	NA	NA	NA	NA	NA	--
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	0.85 J	NA	NA	NA	NA	NA	NA	2 J
TOTAL DISSOLVED SOLIDS	NA	1270	NA	NA	NA	NA	NA	NA	180
TOTAL ORGANIC CARBON	NA	471	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A	MRC-MW26A	MRC-M
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315	MRC-MW-26A-042315	MRC-MW-27A-042115
SAMPLE DATE		20150514	20150514	20150506	20150506	20150513	20150513	20150423	20150421
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	NA	--	--	NA	--	NA	--
1,1,2-TRICHLOROETHANE	5	--	NA	--	--	NA	--	NA	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	1.1	NA	--	--	NA	--	NA	--
1,1-DICHLOROETHANE	90	15.9	NA	--	1.6	NA	--	NA	1.9
1,1-DICHLOROETHENE	7	195	NA	--	5.2	NA	0.58 J	NA	2
1,2,3-TRICHLOROBENZENE	NA	--	NA	--	--	NA	--	NA	--
1,2,4-TRICHLOROBENZENE	70	--	NA	--	--	NA	--	NA	--
1,2-DICHLOROBENZENE	600	--	NA	--	--	NA	--	NA	--
1,2-DICHLOROETHANE	5	--	NA	--	--	NA	--	NA	--
1,2-DICHLOROPROPANE	5	--	NA	--	--	NA	--	NA	--
1,3-DICHLOROBENZENE	1.8	--	NA	--	--	NA	--	NA	--
1,4-DICHLOROBENZENE	75	--	NA	--	--	NA	--	NA	--
1,4-DIOXANE	3	--	NA	--	--	NA	--	NA	--
2-BUTANONE	700	--	NA	--	--	NA	--	NA	--
ACETONE	550	--	NA	--	--	NA	--	NA	--
BENZENE	5	29.5	NA	--	0.24 J	NA	0.69 J	NA	1.7
BROMOMETHANE	0.85	--	NA	--	--	NA	--	NA	--
CARBON DISULFIDE	100	--	NA	--	--	NA	--	NA	--
CARBON TETRACHLORIDE	5	--	NA	--	--	NA	--	NA	--
CHLOROBENZENE	100	--	NA	--	--	NA	--	NA	--
CHLOROETHANE	3.6	--	NA	--	--	NA	--	NA	--
CHLOROFORM	80	0.35 J	NA	--	--	NA	--	NA	--
CHLOROMETHANE	19	--	NA	--	--	NA	--	NA	--
CIS-1,2-DICHLOROETHENE	70	7.2	NA	--	--	NA	9.2	NA	43.5
CYCLOHEXANE	NA	1.1	NA	--	--	NA	--	NA	1.1
DICHLORODIFLUOROMETHANE	NA	--	NA	--	--	NA	--	NA	--
ETHYLBENZENE	700	--	NA	--	--	NA	--	NA	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	14	NA	--	--	NA	--	NA	--
M+P-XYLENES	NA	--	NA	--	--	NA	--	NA	--
METHYL CYCLOHEXANE	NA	--	NA	--	--	NA	--	NA	--
METHYL TERT-BUTYL ETHER	20	--	NA	--	--	NA	--	NA	23.6
METHYLENE CHLORIDE	5	--	NA	--	--	NA	--	NA	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	NA	--	--	NA	--	NA	--
TETRACHLOROETHENE	5	8.4	NA	--	--	NA	--	NA	--
TOLUENE	1000	--	NA	--	--	NA	--	NA	--
TRANS-1,2-DICHLOROETHENE	100	--	NA	--	--	NA	--	NA	4.4
TRICHLOROETHENE	5	708	NA	--	1.8	NA	147	NA	103

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A	MRC-MW26A	MRC-M
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315	MRC-MW-26A-042315	MRC-MW-27A-042115
SAMPLE DATE		20150514	20150514	20150506	20150506	20150513	20150513	20150423	20150421
TRICHLOROFLUOROMETHANE	NA	--	NA	--	--	NA	--	NA	--
VINYL CHLORIDE	2	0.76 J	NA	--	--	NA	--	NA	20.8
Volatile gases (µg/L)									
ETHANE	NA	--	NA	NA	NA	1.2 J	--	NA	5.6
ETHENE	NA	--	NA	NA	NA	--	--	NA	2.4
METHANE	NA	16.8	NA	NA	NA	302	11.4	NA	1640
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	47.1	NA	0.29	7.4	NA	1.2	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	--	--	--	--	--	--
ARSENIC	10	--	--	--	--	3.6	--	--	4.2
BARIUM	2000	100	100	40	110	270	170	440	530
BERYLLIUM	4	0.675	0.68 J	--	--	31	0.78 J	16	1.9
CADMIUM	5	--	--	--	--	1.4	--	--	--
CHROMIUM	100	--	--	0.78 J	--	1.2 J	2.4	--	1.1 J
COBALT	NA	81	81	22	110	200	67	410	580
COPPER	1300	--	--	--	--	43	4.5 J	--	2.8 J
IRON	300	29750	30300	290	660	250	11700	30100	110000
LEAD	15	--	--	--	--	--	1.7 J	--	--
MANGANESE	50	3400	3400	980	2200	33100	2400	8700	28800
MERCURY	2	--	--	NA	NA	--	--	--	--
MOLYBDENUM	NA	--	--	--	--	--	--	--	--
NICKEL	73	83.5	84	47	190	690	84	210	240
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	--	--	--	13	--	--	--
SILVER	100	--	--	--	--	--	--	--	--
THALLIUM	2	--	--	--	--	--	--	--	--
VANADIUM	3.7	--	--	--	0.77 J	--	2 J	--	--
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION	MDE Groundwater Standard[1,2]	MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A	MRC-MW26A	MRC-M
SAMPLE ID		MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315	MRC-MW-26A-042315	MRC-MW-27A-042115
SAMPLE DATE		20150514	20150514	20150506	20150506	20150513	20150513	20150423	20150421
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	43	NA	NA	NA	3 J	66	NA	44
AMMONIA-N	NA	--	NA	NA	NA	0.37	0.15	NA	1.6
CHLORIDE	NA	74.1	NA	NA	NA	515	431	NA	726
DISSOLVED ORGANIC CARBON	NA	0.38 J	NA	NA	NA	0.67 J	1.7	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	--	NA	NA	NA	0.15 J	--	NA	--
ORTHOPHOSPHATE	NA	--	NA	NA	NA	--	--	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	2 J	NA	NA	NA	1.2 J	18.8	NA	3.8
TOTAL DISSOLVED SOLIDS	NA	180	NA	NA	NA	954	742	NA	1180
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	3.9

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		IW27A	MRC-MW27B		MRC-MW27C	MRC-MW29A	MRC-MW30A	MRC-MW31A	MRC-MW32A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115	MRC-MW-29A-042115	MRC-MW-30A-041515	MRC-MW-31A-041515	MRC-MW-32A-041315
SAMPLE DATE		20150511	20150421	20150511	20150421	20150421	20150415	20150415	20150413
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	--	NA	--	--	NA	NA	--
1,1,2-TRICHLOROETHANE	5	NA	0.34 J	NA	--	--	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	--	NA	--	--	NA	NA	--
1,1-DICHLOROETHANE	90	NA	9.9	NA	--	4.8	NA	NA	--
1,1-DICHLOROETHENE	7	NA	18.8	NA	--	3.1	NA	NA	--
1,2,3-TRICHLOROBENZENE	NA	NA	--	NA	--	--	NA	NA	--
1,2,4-TRICHLOROBENZENE	70	NA	--	NA	--	--	NA	NA	--
1,2-DICHLOROBENZENE	600	NA	--	NA	--	--	NA	NA	--
1,2-DICHLOROETHANE	5	NA	--	NA	--	--	NA	NA	--
1,2-DICHLOROPROPANE	5	NA	--	NA	--	--	NA	NA	--
1,3-DICHLOROBENZENE	1.8	NA	--	NA	--	--	NA	NA	--
1,4-DICHLOROBENZENE	75	NA	--	NA	--	--	NA	NA	--
1,4-DIOXANE	3	NA	--	NA	--	--	NA	NA	NA
2-BUTANONE	700	NA	--	NA	--	--	NA	NA	--
ACETONE	550	NA	--	NA	--	--	NA	NA	--
BENZENE	5	NA	1	NA	--	--	NA	NA	--
BROMOMETHANE	0.85	NA	--	NA	--	--	NA	NA	--
CARBON DISULFIDE	100	NA	--	NA	--	--	NA	NA	--
CARBON TETRACHLORIDE	5	NA	--	NA	--	--	NA	NA	--
CHLOROBENZENE	100	NA	--	NA	--	--	NA	NA	--
CHLOROETHANE	3.6	NA	--	NA	--	--	NA	NA	--
CHLOROFORM	80	NA	--	NA	--	--	NA	NA	--
CHLOROMETHANE	19	NA	--	NA	--	--	NA	NA	--
CIS-1,2-DICHLOROETHENE	70	NA	455	NA	--	4.5	NA	NA	--
CYCLOHEXANE	NA	NA	--	NA	--	--	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	--	NA	--	--	NA	NA	--
ETHYLBENZENE	700	NA	--	NA	--	--	NA	NA	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	--
ISOPROPYLBENZENE	66	NA	--	NA	--	--	NA	NA	--
M+P-XYLENES	NA	NA	--	NA	--	--	NA	NA	--
METHYL CYCLOHEXANE	NA	NA	--	NA	--	--	NA	NA	NA
METHYL TERT-BUTYL ETHER	20	NA	6.7	NA	--	3.8	NA	NA	--
METHYLENE CHLORIDE	5	NA	--	NA	--	--	NA	NA	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	--
O-XYLENE	NA	NA	--	NA	--	--	NA	NA	--
TETRACHLOROETHENE	5	NA	1.1	NA	--	--	NA	NA	--
TOLUENE	1000	NA	--	NA	--	--	NA	NA	--
TRANS-1,2-DICHLOROETHENE	100	NA	6 J	NA	--	--	NA	NA	--
TRICHLOROETHENE	5	NA	1250	NA	--	10.6	NA	NA	0.56 J

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		IW27A	MRC-MW27B		MRC-MW27C	MRC-MW29A	MRC-MW30A	MRC-MW31A	MRC-MW32A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115	MRC-MW-29A-042115	MRC-MW-30A-041515	MRC-MW-31A-041515	MRC-MW-32A-041315
SAMPLE DATE		20150511	20150421	20150511	20150421	20150421	20150415	20150415	20150413
TRICHLOROFLUOROMETHANE	NA	NA	--	NA	--	--	NA	NA	--
VINYL CHLORIDE	2	NA	9.9	NA	--	0.77 J	NA	NA	--
Volatile gases (µg/L)									
ETHANE	NA	NA	--	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	--	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	6.1	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	--	NA	NA	--	0.8 J	--	NA
ARSENIC	10	NA	--	NA	NA	--	--	--	NA
BARIUM	2000	NA	39	NA	NA	280	59	95	NA
BERYLLIUM	4	NA	2	NA	NA	6.8	--	5.4	NA
CADMIUM	5	NA	--	NA	NA	0.72 J	--	--	NA
CHROMIUM	100	NA	0.92 J	NA	NA	1.1 J	2 J	0.87 J	NA
COBALT	NA	NA	210	NA	NA	310	6.6	49	NA
COPPER	1300	NA	8.3	NA	NA	9.9	2.6 J	23	NA
IRON	300	NA	140	NA	NA	11700	90	--	NA
LEAD	15	NA	--	NA	NA	--	--	--	NA
MANGANESE	50	NA	120	NA	NA	3200	46	20	NA
MERCURY	2	NA	--	NA	NA	NA	--	--	NA
MOLYBDENUM	NA	NA	--	NA	NA	--	--	--	NA
NICKEL	73	NA	240	NA	NA	160	6.2	88	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	--	NA	NA	--	--	--	NA
SILVER	100	NA	--	NA	NA	--	--	--	NA
THALLIUM	2	NA	0.49 J	NA	NA	--	--	--	NA
VANADIUM	3.7	NA	--	NA	NA	0.92 J	6.7	--	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION		IW27A	MRC-MW27B		MRC-MW27C	MRC-MW29A	MRC-MW30A	MRC-MW31A	MRC-MW32A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115	MRC-MW-29A-042115	MRC-MW-30A-041515	MRC-MW-31A-041515	MRC-MW-32A-041315
SAMPLE DATE		20150511	20150421	20150511	20150421	20150421	20150415	20150415	20150413
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	5 J	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	--	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	78.8	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	2.7	NA	1	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	--	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	0.0047 J	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	7	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	94	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	1	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW33A	MRC-MW34A	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-33A-041515	MRC-MW-34A-041315	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE		20150415	20150413	20150413	20150511	20150413	20150504	20150504	20150504
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	NA	--	--	--	--
1,1,2-TRICHLOROETHANE	5	--	NA	NA	NA	NA	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	NA	--	--	--	--
1,1-DICHLOROETHANE	90	--	--	0.76 J	NA	--	--	--	--
1,1-DICHLOROETHENE	7	0.3 J	--	--	NA	--	--	--	--
1,2,3-TRICHLOROBENZENE	NA	--	--	--	NA	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	NA	--	--	--	--
1,2-DICHLOROBENZENE	600	--	--	--	NA	--	--	--	--
1,2-DICHLOROETHANE	5	--	--	--	NA	--	--	--	--
1,2-DICHLOROPROPANE	5	--	--	--	NA	--	--	--	--
1,3-DICHLOROBENZENE	1.8	--	--	--	NA	--	--	--	--
1,4-DICHLOROBENZENE	75	--	--	--	NA	--	--	--	--
1,4-DIOXANE	3	--	NA	NA	NA	NA	--	--	--
2-BUTANONE	700	--	--	--	NA	--	--	--	--
ACETONE	550	--	--	--	NA	--	--	--	--
BENZENE	5	--	--	0.21 J	NA	--	--	--	--
BROMOMETHANE	0.85	--	--	--	NA	--	0.6 J	0.43 J	0.41 J
CARBON DISULFIDE	100	--	--	--	NA	--	--	--	--
CARBON TETRACHLORIDE	5	--	--	2.9	NA	--	--	--	--
CHLOROBENZENE	100	--	--	--	NA	--	--	--	--
CHLOROETHANE	3.6	--	--	--	NA	--	--	--	--
CHLOROFORM	80	--	--	1.2	NA	--	--	--	--
CHLOROMETHANE	19	--	--	--	NA	--	--	--	--
CIS-1,2-DICHLOROETHENE	70	1.1	--	13	NA	--	0.84 J	5.5	--
CYCLOHEXANE	NA	--	NA	NA	NA	NA	--	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	NA	--	--	--	--
ETHYLBENZENE	700	--	--	--	NA	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	--	--	NA	--	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	NA	--	--	--	--
M+P-XYLENES	NA	--	--	--	NA	--	--	--	--
METHYL CYCLOHEXANE	NA	--	NA	NA	NA	NA	--	--	--
METHYL TERT-BUTYL ETHER	20	1.9	--	19	NA	--	--	--	--
METHYLENE CHLORIDE	5	--	--	--	NA	--	--	--	--
NAPHTHALENE	0.65	NA	--	--	NA	--	NA	NA	NA
O-XYLENE	NA	--	--	--	NA	--	--	--	--
TETRACHLOROETHENE	5	--	--	--	NA	--	--	--	--
TOLUENE	1000	--	--	--	NA	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	0.94 J	NA	--	--	--	--
TRICHLOROETHENE	5	1.1	14	15	NA	--	33	18.2	--

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW33A	MRC-MW34A	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-33A-041515	MRC-MW-34A-041315	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE		20150415	20150413	20150413	20150511	20150413	20150504	20150504	20150504
TRICHLOROFLUOROMETHANE	NA	--	--	--	NA	--	--	--	--
VINYL CHLORIDE	2	--	--	2.2	NA	--	--	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	0.38 J	NA	NA	--	--	NA
ETHENE	NA	NA	NA	--	NA	NA	--	--	NA
METHANE	NA	NA	NA	91	NA	NA	--	--	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	NA	--	NA	NA	--	NA	NA
ARSENIC	10	--	NA	--	NA	NA	1.7 J	NA	NA
BARIUM	2000	43	NA	151	NA	NA	46	NA	NA
BERYLLIUM	4	4.3	NA	10.1	NA	NA	0.39 J	NA	NA
CADMIUM	5	--	NA	0.36 J	NA	NA	--	NA	NA
CHROMIUM	100	0.81 J	NA	--	NA	NA	2.3	NA	NA
COBALT	NA	47	NA	138	NA	NA	3.7 J	NA	NA
COPPER	1300	5.1 J	NA	41.3	NA	NA	--	NA	NA
IRON	300	52 J	NA	119	NA	NA	560	NA	NA
LEAD	15	--	NA	--	NA	NA	1.1 J	NA	NA
MANGANESE	50	250	NA	511	NA	NA	28	NA	NA
MERCURY	2	--	NA	--	NA	NA	--	NA	NA
MOLYBDENUM	NA	--	NA	--	NA	NA	--	NA	NA
NICKEL	73	35	NA	164	NA	NA	3.4 J	NA	NA
POTASSIUM	NA	NA	NA	7240	NA	NA	NA	NA	NA
SELENIUM	50	--	NA	0.829 J	NA	NA	4.4 J	NA	NA
SILVER	100	--	NA	--	NA	NA	--	NA	NA
THALLIUM	2	--	NA	0.279 J	NA	NA	--	NA	NA
VANADIUM	3.7	--	NA	0.935 J	NA	NA	2.8	NA	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION	MDE Groundwater Standard[1,2]	MRC-MW33A	MRC-MW34A	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID		MRC-MW-33A-041515	MRC-MW-34A-041315	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE		20150415	20150413	20150413	20150511	20150413	20150504	20150504	20150504
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	39	31	NA
AMMONIA-N	NA	NA	NA	0.034 J	NA	NA	--	--	NA
CHLORIDE	NA	NA	NA	186	NA	NA	33.2	41.1	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	1.4	NA	2.8	7.7	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	0.5 J	NA	NA	6.7	0.8	NA
ORTHOPHOSPHATE	NA	NA	NA	0.003 J	NA	NA	--	0.052	NA
SILICON DIOXIDE	NA	NA	NA	8.5	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	46.9	NA	NA	241	27.8	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	338	NA	NA	530	194	NA
TOTAL ORGANIC CARBON	NA	NA	NA	1.5	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414	MRC-MW46A MRC-MW-46A-050115 20150501	MRC-MW48A MRC-MW-48A-051315 20150513
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	NA	NA	NA	NA	--
1,1,2-TRICHLOROETHANE	5	--	--	--	NA	NA	NA	NA	0.7 J
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	NA	NA	NA	NA	--
1,1-DICHLOROETHANE	90	--	--	--	NA	NA	NA	NA	--
1,1-DICHLOROETHENE	7	--	--	--	NA	NA	NA	NA	21
1,2,3-TRICHLOROBENZENE	NA	--	--	--	NA	NA	NA	NA	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	NA	NA	NA	NA	--
1,2-DICHLOROBENZENE	600	--	--	--	NA	NA	NA	NA	--
1,2-DICHLOROETHANE	5	--	--	--	NA	NA	NA	NA	--
1,2-DICHLOROPROPANE	5	--	--	--	NA	NA	NA	NA	--
1,3-DICHLOROBENZENE	1.8	--	--	--	NA	NA	NA	NA	--
1,4-DICHLOROBENZENE	75	--	--	--	NA	NA	NA	NA	--
1,4-DIOXANE	3	--	--	--	NA	NA	NA	NA	--
2-BUTANONE	700	--	--	--	NA	NA	NA	NA	--
ACETONE	550	--	--	--	NA	NA	NA	NA	--
BENZENE	5	--	--	--	NA	NA	NA	NA	0.44 J
BROMOMETHANE	0.85	--	--	--	NA	NA	NA	NA	--
CARBON DISULFIDE	100	--	--	--	NA	NA	NA	NA	2.4
CARBON TETRACHLORIDE	5	--	--	--	NA	NA	NA	NA	--
CHLOROBENZENE	100	--	--	--	NA	NA	NA	NA	--
CHLOROETHANE	3.6	--	--	--	NA	NA	NA	NA	--
CHLOROFORM	80	9.9	--	--	NA	NA	NA	NA	--
CHLOROMETHANE	19	0.31 J	--	0.49 J	NA	NA	NA	NA	--
CIS-1,2-DICHLOROETHENE	70	--	0.33 J	--	NA	NA	NA	NA	2190
CYCLOHEXANE	NA	--	--	--	NA	NA	NA	NA	0.85 J
DICHLORODIFLUOROMETHANE	NA	--	--	--	NA	NA	NA	NA	--
ETHYLBENZENE	700	--	--	--	NA	NA	NA	NA	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	NA	NA	NA	NA	1.4
M+P-XYLENES	NA	--	--	--	NA	NA	NA	NA	--
METHYL CYCLOHEXANE	NA	--	--	--	NA	NA	NA	NA	--
METHYL TERT-BUTYL ETHER	20	--	--	--	NA	NA	NA	NA	--
METHYLENE CHLORIDE	5	--	--	--	NA	NA	NA	NA	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	NA	NA	NA	NA	1.1
TETRACHLOROETHENE	5	--	0.48 J	--	NA	NA	NA	NA	1.7
TOLUENE	1000	--	--	--	NA	NA	NA	NA	0.69 J
TRANS-1,2-DICHLOROETHENE	100	--	--	--	NA	NA	NA	NA	16.8
TRICHLOROETHENE	5	--	0.56 J	--	NA	NA	NA	NA	378

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414	MRC-MW46A MRC-MW-46A-050115 20150501	MRC-MW48A MRC-MW-48A-051315 20150513
TRICHLOROFLUOROMETHANE	NA	--	--	--	NA	NA	NA	NA	--
VINYL CHLORIDE	2	--	--	--	NA	NA	NA	NA	172
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	41.9
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	52.6
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	6160
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	0.43	NA	NA	0.18	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	--	--	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	NA	--	--	NA	NA	3.1	--
ARSENIC	10	NA	NA	--	5 J	NA	NA	--	1.2 J
BARIUM	2000	NA	NA	640	760	NA	NA	140	470
BERYLLIUM	4	NA	NA	0.65 J	13	NA	NA	0.44 J	3.6
CADMIUM	5	NA	NA	--	--	NA	NA	--	--
CHROMIUM	100	NA	NA	1.3 J	1.9 J	NA	NA	1.5 J	1.4 J
COBALT	NA	NA	NA	340	310 J	NA	NA	12	100
COPPER	1300	NA	NA	4.4 J	8.9 J	NA	NA	8.6	--
IRON	300	NA	NA	70000	136000	NA	NA	200	83100
LEAD	15	NA	NA	--	--	NA	NA	--	--
MANGANESE	50	NA	NA	18400	6200 J	NA	NA	58	14400
MERCURY	2	NA	NA	--	--	NA	NA	--	--
MOLYBDENUM	NA	NA	NA	--	--	NA	NA	1.8 J	--
NICKEL	73	NA	NA	220	390 J	NA	NA	25	51
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	--	13 J	NA	NA	--	--
SILVER	100	NA	NA	--	0.76 J	NA	NA	--	--
THALLIUM	2	NA	NA	--	--	NA	NA	--	--
VANADIUM	3.7	NA	NA	--	--	NA	NA	2.2 J	--
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414	MRC-MW46A MRC-MW-46A-050115 20150501	MRC-MW48A MRC-MW-48A-051315 20150513
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	1.1	NA	--	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	143
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	0.07 J
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	139
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	7.9
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	--
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	--
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	2.3 J
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	430
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION		MRC-MW49A	MRC-MW50A			MRC-MW52A	MRC-MW53A	MRC-MW53B	MRC-MW54A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D	MRC-MW-52A-042015	MRC-MW-53A-041615	MRC-MW-53B-041615	MRC-MW-54A-041615
SAMPLE DATE		20150424	20150505	20150505	20150505	20150420	20150416	20150416	20150416
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	--	--	--	NA	--	--	NA
1,1,2-TRICHLOROETHANE	5	NA	--	--	--	NA	--	--	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	--	--	--	NA	--	--	NA
1,1-DICHLOROETHANE	90	NA	--	--	--	NA	--	0.37 J	NA
1,1-DICHLOROETHENE	7	NA	--	--	--	NA	--	16.2	NA
1,2,3-TRICHLOROBENZENE	NA	NA	--	--	--	NA	--	--	NA
1,2,4-TRICHLOROBENZENE	70	NA	--	--	--	NA	--	--	NA
1,2-DICHLOROBENZENE	600	NA	--	--	--	NA	--	--	NA
1,2-DICHLOROETHANE	5	NA	--	--	--	NA	--	--	NA
1,2-DICHLOROPROPANE	5	NA	--	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	1.8	NA	--	--	--	NA	--	--	NA
1,4-DICHLOROBENZENE	75	NA	--	--	--	NA	--	--	NA
1,4-DIOXANE	3	NA	--	--	--	NA	--	--	NA
2-BUTANONE	700	NA	--	--	--	NA	--	--	NA
ACETONE	550	NA	--	--	--	NA	--	--	NA
BENZENE	5	NA	0.95 J	0.885	0.82 J	NA	10.3	1.2	NA
BROMOMETHANE	0.85	NA	--	--	--	NA	--	--	NA
CARBON DISULFIDE	100	NA	--	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	5	NA	--	--	--	NA	--	0.5 J	NA
CHLOROBENZENE	100	NA	--	--	--	NA	--	--	NA
CHLOROETHANE	3.6	NA	--	--	--	NA	--	--	NA
CHLOROFORM	80	NA	--	--	--	NA	--	--	NA
CHLOROMETHANE	19	NA	--	--	--	NA	--	--	NA
CIS-1,2-DICHLOROETHENE	70	NA	0.46 J	0.495	0.53 J	NA	7.2	13.6	NA
CYCLOHEXANE	NA	NA	--	--	--	NA	--	--	NA
DICHLORODIFLUOROMETHANE	NA	NA	--	--	--	NA	--	--	NA
ETHYLBENZENE	700	NA	--	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	NA	--	--	--	NA	--	--	NA
M+P-XYLENES	NA	NA	--	--	--	NA	--	--	NA
METHYL CYCLOHEXANE	NA	NA	--	--	--	NA	--	--	NA
METHYL TERT-BUTYL ETHER	20	NA	--	--	--	NA	7.1	--	NA
METHYLENE CHLORIDE	5	NA	--	--	--	NA	--	--	NA
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	--	--	--	NA	0.38 J	--	NA
TETRACHLOROETHENE	5	NA	--	--	--	NA	--	--	NA
TOLUENE	1000	NA	--	--	--	NA	--	--	NA
TRANS-1,2-DICHLOROETHENE	100	NA	0.39 J	0.385	0.38 J	NA	0.34 J	--	NA
TRICHLOROETHENE	5	NA	11.2	11.45	11.7	NA	41	246	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		MRC-MW49A	MRC-MW50A			MRC-MW52A	MRC-MW53A	MRC-MW53B	MRC-MW54A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D	MRC-MW-52A-042015	MRC-MW-53A-041615	MRC-MW-53B-041615	MRC-MW-54A-041615
SAMPLE DATE		20150424	20150505	20150505	20150505	20150420	20150416	20150416	20150416
TRICHLOROFLUOROMETHANE	NA	NA	--	--	--	NA	--	--	NA
VINYL CHLORIDE	2	NA	--	--	--	NA	--	--	NA
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	4	14.1	0.2
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	--	--	--	1.1 J	0.86 J	NA
ARSENIC	10	2.5 J	2.1 J	1.9	1.7 J	3.5	1.3 J	--	NA
BARIUM	2000	270	100	100	100	850	310	210	NA
BERYLLIUM	4	14	2.2	2.15	2.1	71	2.9	1	NA
CADMIUM	5	1.8	--	--	--	2.5	2	--	NA
CHROMIUM	100	1.2 J	--	--	--	1.6 J	2.7	1.2 J	NA
COBALT	NA	720	46 J	45	44 J	2000	1400	57	NA
COPPER	1300	82	16 J	16	16 J	100	41	5.9	NA
IRON	300	91	1100	1050	1000	10300	260	1400	NA
LEAD	15	1.5 J	1.4 J	1.45	1.5 J	2.7	--	--	NA
MANGANESE	50	960	260 J	255	250 J	26200	1600	1100	NA
MERCURY	2	--	--	--	--	--	0.43 J	--	NA
MOLYBDENUM	NA	--	--	--	--	--	--	--	NA
NICKEL	73	1500	43 J	41.5	40 J	1400	1200	81	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	7.9	8.4 J	8.45	8.5 J	9.9	2.4 J	--	NA
SILVER	100	0.9 J	--	--	--	--	--	--	NA
THALLIUM	2	0.81 J	0.51 J	0.445	0.38 J	1.1	--	--	NA
VANADIUM	3.7	--	1.2 J	1.2	1.2 J	1.7 J	1.3 J	--	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		MRC-MW49A	MRC-MW50A			MRC-MW52A	MRC-MW53A	MRC-MW53B	MRC-MW54A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D	MRC-MW-52A-042015	MRC-MW-53A-041615	MRC-MW-53B-041615	MRC-MW-54A-041615
SAMPLE DATE		20150424	20150505	20150505	20150505	20150420	20150416	20150416	20150416
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	0.23	0.25	0.27	--	2.6	4.1	--
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		MRC-MW57A	MRC-MW58A			MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-57A-042415	MRC-MW-58A-042315	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE		20150424	20150423	20150423	20150423	20150424	20150422	20150422	20150511
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	--	NA	--	--	NA
1,1,2-TRICHLOROETHANE	5	--	--	--	--	NA	--	0.98 J	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	--	NA	--	--	NA
1,1-DICHLOROETHANE	90	--	--	--	--	NA	--	--	NA
1,1-DICHLOROETHENE	7	--	--	--	--	NA	3.1	8.6	NA
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	NA	--	--	NA
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	NA	0.95 J	--	NA
1,2-DICHLOROBENZENE	600	--	--	--	--	NA	--	--	NA
1,2-DICHLOROETHANE	5	--	--	--	--	NA	--	--	NA
1,2-DICHLOROPROPANE	5	--	--	--	--	NA	--	--	NA
1,3-DICHLOROBENZENE	1.8	--	--	--	--	NA	--	--	NA
1,4-DICHLOROBENZENE	75	--	--	--	--	NA	--	--	NA
1,4-DIOXANE	3	--	--	--	--	NA	--	--	NA
2-BUTANONE	700	4.9 J	--	--	--	NA	--	--	NA
ACETONE	550	57.3	--	--	--	NA	3.7 J	--	NA
BENZENE	5	--	--	--	--	NA	0.72 J	0.35 J	NA
BROMOMETHANE	0.85	--	--	--	--	NA	--	--	NA
CARBON DISULFIDE	100	--	--	--	--	NA	--	--	NA
CARBON TETRACHLORIDE	5	--	--	--	--	NA	--	--	NA
CHLOROBENZENE	100	--	--	--	--	NA	--	--	NA
CHLOROETHANE	3.6	--	--	--	--	NA	--	--	NA
CHLOROFORM	80	--	--	--	--	NA	--	--	NA
CHLOROMETHANE	19	0.36 J	0.36 J	0.2575	--	NA	--	--	NA
CIS-1,2-DICHLOROETHENE	70	--	--	--	--	NA	789	170	NA
CYCLOHEXANE	NA	--	--	--	--	NA	1.7	--	NA
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	NA	--	--	NA
ETHYLBENZENE	700	--	--	--	--	NA	--	--	NA
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	NA	0.95 J	--	NA
M+P-XYLENES	NA	--	--	--	--	NA	--	--	NA
METHYL CYCLOHEXANE	NA	--	--	--	--	NA	--	--	NA
METHYL TERT-BUTYL ETHER	20	--	--	--	--	NA	--	--	NA
METHYLENE CHLORIDE	5	--	--	--	--	NA	--	--	NA
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	NA	--	--	NA
TETRACHLOROETHENE	5	--	--	--	--	NA	11	14.8	NA
TOLUENE	1000	--	--	--	--	NA	0.72 J	0.29 J	NA
TRANS-1,2-DICHLOROETHENE	100	--	--	--	--	NA	6.4	1.9	NA
TRICHLOROETHENE	5	--	--	--	--	NA	741	4070	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		MRC-MW57A	MRC-MW58A			MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-57A-042415	MRC-MW-58A-042315	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE		20150424	20150423	20150423	20150423	20150424	20150422	20150422	20150511
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	NA	0.69 J	--	NA
VINYL CHLORIDE	2	--	--	--	--	NA	122	4.6	NA
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	--	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	--	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	54.9	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	0.38	0.37	0.36	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	NA	NA	NA	--	--	--	NA
ARSENIC	10	1.6 J	NA	NA	NA	--	--	--	NA
BARIUM	2000	340	NA	NA	NA	180	59	46	NA
BERYLLIUM	4	--	NA	NA	NA	1.9	0.91 J	--	NA
CADMIUM	5	--	NA	NA	NA	--	--	--	NA
CHROMIUM	100	1.4 J	NA	NA	NA	0.9 J	--	--	NA
COBALT	NA	39	NA	NA	NA	39	57 J	30 J	NA
COPPER	1300	15	NA	NA	NA	4.3 J	--	--	NA
IRON	300	18400	NA	NA	NA	2500	27200	5000	NA
LEAD	15	--	NA	NA	NA	--	--	--	NA
MANGANESE	50	7800	NA	NA	NA	2800	4000	2000	NA
MERCURY	2	--	NA	NA	NA	--	--	--	NA
MOLYBDENUM	NA	1.2 J	NA	NA	NA	--	--	--	NA
NICKEL	73	14	NA	NA	NA	29	63	61	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	NA	NA	NA	--	--	--	NA
SILVER	100	--	NA	NA	NA	--	--	--	NA
THALLIUM	2	--	NA	NA	NA	--	--	--	NA
VANADIUM	3.7	0.99 J	NA	NA	NA	--	--	--	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION	MDE Groundwater Standard[1,2]	MRC-MW57A	MRC-MW58A			MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID		MRC-MW-57A-042415	MRC-MW-58A-042315	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE		20150424	20150423	20150423	20150423	20150424	20150422	20150422	20150511
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	--	--	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	39	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	1.02	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	40.6	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	0.32 J	0.43 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	--	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	--	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	3.8 J	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	82	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	NA	NA	--	NA	NA	--	--
1,1,2-TRICHLOROETHANE	5	NA	NA	NA	--	NA	NA	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	NA	--	NA	NA	--	--
1,1-DICHLOROETHANE	90	NA	NA	NA	3.9	NA	NA	--	--
1,1-DICHLOROETHENE	7	NA	NA	NA	3.3	NA	NA	--	--
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	--	NA	NA	--	--
1,2,4-TRICHLOROBENZENE	70	NA	NA	NA	--	NA	NA	--	--
1,2-DICHLOROBENZENE	600	NA	NA	NA	--	NA	NA	--	--
1,2-DICHLOROETHANE	5	NA	NA	NA	--	NA	NA	--	--
1,2-DICHLOROPROPANE	5	NA	NA	NA	--	NA	NA	--	--
1,3-DICHLOROBENZENE	1.8	NA	NA	NA	--	NA	NA	--	--
1,4-DICHLOROBENZENE	75	NA	NA	NA	--	NA	NA	--	--
1,4-DIOXANE	3	NA	NA	NA	--	NA	NA	--	--
2-BUTANONE	700	NA	NA	NA	--	NA	NA	--	--
ACETONE	550	NA	NA	NA	--	NA	NA	12.3	--
BENZENE	5	NA	NA	NA	--	NA	NA	0.34 J	--
BROMOMETHANE	0.85	NA	NA	NA	--	NA	NA	--	--
CARBON DISULFIDE	100	NA	NA	NA	--	NA	NA	--	--
CARBON TETRACHLORIDE	5	NA	NA	NA	--	NA	NA	--	--
CHLOROBENZENE	100	NA	NA	NA	--	NA	NA	--	--
CHLOROETHANE	3.6	NA	NA	NA	--	NA	NA	--	--
CHLOROFORM	80	NA	NA	NA	--	NA	NA	--	--
CHLOROMETHANE	19	NA	NA	NA	--	NA	NA	--	--
CIS-1,2-DICHLOROETHENE	70	NA	NA	NA	5.2	NA	NA	--	--
CYCLOHEXANE	NA	NA	NA	NA	--	NA	NA	--	--
DICHLORODIFLUOROMETHANE	NA	NA	NA	NA	--	NA	NA	--	--
ETHYLBENZENE	700	NA	NA	NA	--	NA	NA	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	NA	NA	NA	--	NA	NA	--	--
M+P-XYLENES	NA	NA	NA	NA	--	NA	NA	--	--
METHYL CYCLOHEXANE	NA	NA	NA	NA	--	NA	NA	--	--
METHYL TERT-BUTYL ETHER	20	NA	NA	NA	--	NA	NA	--	--
METHYLENE CHLORIDE	5	NA	NA	NA	--	NA	NA	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	--	NA	NA	--	--
TETRACHLOROETHENE	5	NA	NA	NA	--	NA	NA	--	--
TOLUENE	1000	NA	NA	NA	--	NA	NA	--	--
TRANS-1,2-DICHLOROETHENE	100	NA	NA	NA	--	NA	NA	--	--
TRICHLOROETHENE	5	NA	NA	NA	5.9	NA	NA	--	--

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	--	NA	NA	--	--
VINYL CHLORIDE	2	NA	NA	NA	1	NA	NA	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	6.7	NA	NA	2	0.32
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	--	--	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	0.0048 J	--	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	--	--	--	--	2.4	NA
ARSENIC	10	1.9 J	1.2	--	--	9.6	4.3 J	--	NA
BARIUM	2000	890	67.5	89.9	290	660	2300	220	NA
BERYLLIUM	4	18	2.2	0.09 J	1.3	300	200	--	NA
CADMIUM	5	1.9	--	--	--	9.1	10 J	0.39 J	NA
CHROMIUM	100	1.7 J	--	--	1.1 J	4.3	--	--	NA
COBALT	NA	850	17.4	44.5	260 J	8600	1500 J	73 J	NA
COPPER	1300	15	0.779 J	0.354 J	2.9 J	2000	160 J	6.3 J	NA
IRON	300	110	2760	23500	41900	10100	1100	5800	NA
LEAD	15	4.4	--	--	--	8.9	1.7 J	2.8	NA
MANGANESE	50	17100	700	1310	2000 J	14500	7200 J	3000 J	NA
MERCURY	2	--	--	--	--	--	--	--	NA
MOLYBDENUM	NA	--	--	--	--	--	--	--	NA
NICKEL	73	480	52.6	76.4	340 J	14200	4800 J	96 J	NA
POTASSIUM	NA	NA	5450	15300	NA	NA	NA	NA	NA
SELENIUM	50	5.4 J	0.233 J	--	--	32	16 J	--	NA
SILVER	100	--	--	--	--	--	0.87 J	--	NA
THALLIUM	2	--	--	--	--	1.7	0.49 J	--	NA
VANADIUM	3.7	0.8 J	--	--	--	1.9 J	1.2 J	2.2 J	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	--	--
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW70A	MRC-MW70B	MRC-MW71A	MRC-MW71B			MRC-MW72B	
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-70A-062515	MRC-MW-70B-062515	MRC-MW-71A-041615	MRC-MW-71B-041615	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115
SAMPLE DATE		20150625	20150625	20150416	20150416	20150416	20150416	20150415	20150511
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	1.2	1.25	1.3	--	NA
1,1,2-TRICHLOROETHANE	5	--	2.1	--	--	--	--	--	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	0.9 J	0.895	0.89 J	1.3	NA
1,1-DICHLOROETHANE	90	1.2	51	--	4.1	4.1	4.1	--	NA
1,1-DICHLOROETHENE	7	3.7	349	2	58	58.35	58.7	--	NA
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	--	--	--	NA
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	--	--	--	NA
1,2-DICHLOROBENZENE	600	--	--	--	--	--	--	--	NA
1,2-DICHLOROETHANE	5	--	--	--	0.5 J	0.485	0.47 J	--	NA
1,2-DICHLOROPROPANE	5	--	--	--	--	--	--	--	NA
1,3-DICHLOROBENZENE	1.8	--	--	--	--	--	--	--	NA
1,4-DICHLOROBENZENE	75	--	--	--	--	--	--	--	NA
1,4-DIOXANE	3	--	189 J	--	--	--	--	--	NA
2-BUTANONE	700	--	--	--	--	--	--	--	NA
ACETONE	550	--	--	--	--	--	--	--	NA
BENZENE	5	--	4.6	--	--	--	--	--	NA
BROMOMETHANE	0.85	--	--	--	--	--	--	--	NA
CARBON DISULFIDE	100	--	--	--	--	--	--	--	NA
CARBON TETRACHLORIDE	5	--	--	--	--	--	--	--	NA
CHLOROBENZENE	100	--	--	--	--	--	--	0.26 J	NA
CHLOROETHANE	3.6	--	--	--	--	--	--	--	NA
CHLOROFORM	80	--	--	--	--	--	--	--	NA
CHLOROMETHANE	19	--	--	--	--	--	--	--	NA
CIS-1,2-DICHLOROETHENE	70	13.4	145	--	6.7	6.65	6.6	2.4	NA
CYCLOHEXANE	NA	--	--	--	--	--	--	--	NA
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	--	--	--	NA
ETHYLBENZENE	700	--	--	--	--	--	--	--	NA
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	--	--	--	NA
M+P-XYLENES	NA	--	--	--	--	--	--	--	NA
METHYL CYCLOHEXANE	NA	--	--	--	--	--	--	--	NA
METHYL TERT-BUTYL ETHER	20	--	--	--	--	--	--	--	NA
METHYLENE CHLORIDE	5	0.6 J	--	--	--	--	--	--	NA
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	--	--	--	NA
TETRACHLOROETHENE	5	--	2.6	--	0.76 J	0.76	0.76 J	--	NA
TOLUENE	1000	--	--	--	--	--	--	--	NA
TRANS-1,2-DICHLOROETHENE	100	--	2	--	--	--	--	--	NA
TRICHLOROETHENE	5	--	1170	--	45.5	45	44.5	1790	NA

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Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW70A	MRC-MW70B	MRC-MW71A	MRC-MW71B			MRC-MW72B	
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-70A-062515	MRC-MW-70B-062515	MRC-MW-71A-041615	MRC-MW-71B-041615	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115
SAMPLE DATE		20150625	20150625	20150416	20150416	20150416	20150416	20150415	20150511
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	--	--	--	NA
VINYL CHLORIDE	2	3.9	5.2	--	--	--	--	--	NA
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	--	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	--	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	--	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	2	311	0.29	19.3	19.35	19.4	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	NA	3.9	--	--	--	NA	NA
ARSENIC	10	13 J	NA	--	--	--	--	NA	NA
BARIUM	2000	150	NA	30	41	41	41	NA	NA
BERYLLIUM	4	1.4	NA	0.65 J	--	--	--	NA	NA
CADMIUM	5	--	NA	--	--	--	--	NA	NA
CHROMIUM	100	8.4 J	NA	5	0.85 J	0.885	0.92 J	NA	NA
COBALT	NA	11 J	NA	--	25	24.5	24	NA	NA
COPPER	1300	13 J	NA	4.3 J	--	--	--	NA	NA
IRON	300	89800	NA	860	10100	10050	10000	NA	NA
LEAD	15	2.9	NA	0.95 J	--	--	--	NA	NA
MANGANESE	50	2000 J	NA	53	1200	1200	1200	NA	NA
MERCURY	2	--	NA	--	--	--	--	NA	NA
MOLYBDENUM	NA	--	NA	--	--	--	--	NA	NA
NICKEL	73	17 J	NA	7.7	37	37	37	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	3 J	NA	--	--	--	--	NA	NA
SILVER	100	--	NA	--	--	--	--	NA	NA
THALLIUM	2	--	NA	--	--	--	--	NA	NA
VANADIUM	3.7	11 J	NA	11	--	--	--	NA	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW70A	MRC-MW70B	MRC-MW71A	MRC-MW71B			MRC-MW72B	
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-70A-062515	MRC-MW-70B-062515	MRC-MW-71A-041615	MRC-MW-71B-041615	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115
SAMPLE DATE		20150625	20150625	20150416	20150416	20150416	20150416	20150415	20150511
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	0.15 J	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	36	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	0.15 J	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	11.1	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	1.5	0.46 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	0.55	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	3.9	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW73B MRC-MW-73B-041515 20150415	MRC-MW74A MRC-MW-74A-051115 20150511	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[3] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	--	--	0.43 J	--	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	106	--	--	--	--	--
1,1-DICHLOROETHANE	90	--	--	--	--	1.7	18	--	2.4
1,1-DICHLOROETHENE	7	--	--	3.3	--	1.2	2.8	--	4.3
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	--	--	--	--
1,2-DICHLOROBENZENE	600	--	--	--	--	--	--	--	--
1,2-DICHLOROETHANE	5	--	--	--	--	--	--	--	--
1,2-DICHLOROPROPANE	5	--	--	--	--	--	--	--	--
1,3-DICHLOROBENZENE	1.8	--	0.33 J	--	--	--	--	--	--
1,4-DICHLOROBENZENE	75	--	0.68 J	0.95 J	--	--	--	--	--
1,4-DIOXANE	3	--	--	--	--	--	--	--	--
2-BUTANONE	700	--	--	--	--	--	--	--	--
ACETONE	550	--	--	--	22.1	--	--	--	--
BENZENE	5	--	--	--	--	--	14	--	1.7
BROMOMETHANE	0.85	--	--	--	--	--	--	--	--
CARBON DISULFIDE	100	--	--	--	--	--	--	--	--
CARBON TETRACHLORIDE	5	--	--	--	--	--	--	--	--
CHLOROBENZENE	100	0.27 J	--	6.3	--	--	--	--	--
CHLOROETHANE	3.6	--	--	--	--	--	--	--	--
CHLOROFORM	80	--	--	7	--	--	--	--	--
CHLOROMETHANE	19	--	--	--	0.39 J	0.32 J	--	0.34 J	--
CIS-1,2-DICHLOROETHENE	70	3.5	5.9	500	--	1.3	3.9	0.45 J	102
CYCLOHEXANE	NA	--	--	--	0.77 J	--	0.73 J	--	0.61 J
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	--	--	--	--
ETHYLBENZENE	700	--	--	--	--	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	--	0.36 J	--	--
M+P-XYLENES	NA	--	--	--	--	--	--	--	--
METHYL CYCLOHEXANE	NA	--	--	--	0.31 J	--	0.62 J	--	--
METHYL TERT-BUTYL ETHER	20	--	--	--	--	--	117	--	40.3
METHYLENE CHLORIDE	5	--	0.5 J	2.5	--	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	--	--	--	--
TETRACHLOROETHENE	5	--	--	--	--	--	--	--	0.35 J
TOLUENE	1000	--	--	--	--	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	2.6	--	--	--	--	4.7 J
TRICHLOROETHENE	5	68.8	122	21800	--	10.6	8	5.9	284

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW73B MRC-MW-73B-041515 20150415	MRC-MW74A MRC-MW-74A-051115 20150511	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[3] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	--	--	--	--
VINYL CHLORIDE	2	1	--	--	--	--	1.8	--	20
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	NA	NA	--	--	--	--	--
ARSENIC	10	NA	NA	NA	1.2 J	--	1.4 J	2.1 J	1.4 J
BARIUM	2000	NA	NA	NA	98	120	580	100	190
BERYLLIUM	4	NA	NA	NA	12	1.5	29	--	1.3
CADMIUM	5	NA	NA	NA	--	--	--	--	--
CHROMIUM	100	NA	NA	NA	--	--	2.4	1.6 J	7.4
COBALT	NA	NA	NA	NA	510	190	370	60	220
COPPER	1300	NA	NA	NA	3.9 J	--	19	9	19
IRON	300	NA	NA	NA	20800	20100	78500	4000	51900
LEAD	15	NA	NA	NA	--	--	--	1.1 J	1.7 J
MANGANESE	50	NA	NA	NA	25300	7500	19500	1600	14000
MERCURY	2	NA	NA	NA	--	--	--	--	--
MOLYBDENUM	NA	NA	NA	NA	--	--	--	2.7	--
NICKEL	73	NA	NA	NA	470	270	550	15	74
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	2.9 J	--	3.4 J	--	--
SILVER	100	NA	NA	NA	--	--	--	--	--
THALLIUM	2	NA	NA	NA	--	--	--	--	--
VANADIUM	3.7	NA	NA	NA	--	--	--	3.7	12
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW73B MRC-MW-73B-041515 20150415	MRC-MW74A MRC-MW-74A-051115 20150511	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[3] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	0.14 J	--	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION	MDE Groundwater Standard[1,2]	MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B	MRC-MW87A			MRC-MW87B
SAMPLE ID		MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG	MRC-MW-87A-051315-D	MRC-MW-87B-042215
SAMPLE DATE		20150429	20150429	20150422	20150422	20150513	20150513	20150513	20150422
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	--	NA	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	NA	--	NA	--	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	--	NA	--	--	--	--	--
1,1-DICHLOROETHANE	90	NA	1.5	NA	114	--	--	--	--
1,1-DICHLOROETHENE	7	NA	24.9	NA	480	--	--	--	--
1,2,3-TRICHLOROBENZENE	NA	NA	--	NA	--	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	NA	--	NA	--	--	--	--	--
1,2-DICHLOROBENZENE	600	NA	--	NA	--	--	--	--	--
1,2-DICHLOROETHANE	5	NA	--	NA	--	--	--	--	--
1,2-DICHLOROPROPANE	5	NA	--	NA	--	--	--	--	--
1,3-DICHLOROBENZENE	1.8	NA	--	NA	--	--	--	--	--
1,4-DICHLOROBENZENE	75	NA	--	NA	--	--	--	--	--
1,4-DIOXANE	3	NA	--	NA	--	--	--	--	--
2-BUTANONE	700	NA	--	NA	--	--	--	--	--
ACETONE	550	NA	--	NA	--	--	--	--	14.3
BENZENE	5	NA	--	NA	4.6	--	--	--	--
BROMOMETHANE	0.85	NA	--	NA	--	--	--	--	--
CARBON DISULFIDE	100	NA	--	NA	--	--	--	--	--
CARBON TETRACHLORIDE	5	NA	--	NA	--	--	--	--	--
CHLOROBENZENE	100	NA	--	NA	--	--	--	--	--
CHLOROETHANE	3.6	NA	--	NA	--	--	--	--	--
CHLOROFORM	80	NA	--	NA	--	--	--	--	--
CHLOROMETHANE	19	NA	--	NA	--	0.49 J	0.49 J	--	--
CIS-1,2-DICHLOROETHENE	70	NA	2.4	NA	10900	--	--	--	--
CYCLOHEXANE	NA	NA	--	NA	0.48 J	--	--	--	--
DICHLORODIFLUOROMETHANE	NA	NA	--	NA	--	--	--	--	--
ETHYLBENZENE	700	NA	--	NA	0.58 J	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	NA	--	NA	0.25 J	--	--	--	--
M+P-XYLENES	NA	NA	--	NA	0.92 J	--	--	--	--
METHYL CYCLOHEXANE	NA	NA	--	NA	--	--	--	--	--
METHYL TERT-BUTYL ETHER	20	NA	--	NA	--	--	--	--	--
METHYLENE CHLORIDE	5	NA	--	NA	--	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	--	NA	4	--	--	--	--
TETRACHLOROETHENE	5	NA	--	NA	0.45 J	--	--	--	--
TOLUENE	1000	NA	--	NA	1	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	NA	--	NA	122	--	--	--	--
TRICHLOROETHENE	5	NA	61.7	NA	3010	--	--	--	2.3

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B	MRC-MW87A			MRC-MW87B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG	MRC-MW-87A-051315-D	MRC-MW-87B-042215
SAMPLE DATE		20150429	20150429	20150422	20150422	20150513	20150513	20150513	20150422
TRICHLOROFLUOROMETHANE	NA	NA	--	NA	--	--	--	--	--
VINYL CHLORIDE	2	NA	--	NA	147	--	--	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	0.59 J	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	5.8	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	701	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	4.7	15.4	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	NA	--	--	NA	NA	NA	1.4 J
ARSENIC	10	--	NA	3.4	--	NA	NA	NA	1.2 J
BARIUM	2000	28	NA	170	480	NA	NA	NA	67
BERYLLIUM	4	0.58 J	NA	1.3	0.39 J	NA	NA	NA	0.51 J
CADMIUM	5	--	NA	--	--	NA	NA	NA	--
CHROMIUM	100	2 J	NA	0.8 J	3.1	NA	NA	NA	6
COBALT	NA	--	NA	67 J	25 J	NA	NA	NA	1.9 J
COPPER	1300	--	NA	2.5 J	3.6 J	NA	NA	NA	6.2
IRON	300	--	NA	76800	66700	NA	NA	NA	4300
LEAD	15	--	NA	--	--	NA	NA	NA	1.2 J
MANGANESE	50	14	NA	6400	3200	NA	NA	NA	86
MERCURY	2	--	NA	--	--	NA	NA	NA	--
MOLYBDENUM	NA	--	NA	--	--	NA	NA	NA	10
NICKEL	73	5.3 J	NA	50	26	NA	NA	NA	5.5 J
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	NA	8.5	--	NA	NA	NA	--
SILVER	100	--	NA	--	--	NA	NA	NA	--
THALLIUM	2	--	NA	--	--	NA	NA	NA	--
VANADIUM	3.7	--	NA	--	1.5 J	NA	NA	NA	5.1
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION		MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B	MRC-MW87A			MRC-MW87B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG	MRC-MW-87A-051315-D	MRC-MW-87B-042215
SAMPLE DATE		20150429	20150429	20150422	20150422	20150513	20150513	20150513	20150422
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	211	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	--	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	120	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	18.1	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	0.18 J	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	0.011 J	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	1.6 J	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	456	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW88B		MRC-MW90B	MRC-MW91A	MRC-MW92C	MRC-MW93A	MRC-MW94B	MRC-MW95B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215	MRC-MW-92C-042315	MRC-MW-93A-051415	MRC-MW-94B-043015	MRC-MW-95B-043015
SAMPLE DATE		20150429	20150501	20150518	20150422	20150423	20150514	20150430	20150430
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	NA	--	--	--	--
1,1,2-TRICHLOROETHANE	5	--	--	--	NA	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	NA	--	--	--	--
1,1-DICHLOROETHANE	90	--	--	--	NA	--	--	--	--
1,1-DICHLOROETHENE	7	--	--	15.6	NA	--	--	--	--
1,2,3-TRICHLOROBENZENE	NA	--	--	--	NA	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	NA	--	--	--	--
1,2-DICHLOROBENZENE	600	--	--	--	NA	--	--	--	--
1,2-DICHLOROETHANE	5	--	--	--	NA	--	--	--	--
1,2-DICHLOROPROPANE	5	--	--	--	NA	--	--	--	--
1,3-DICHLOROBENZENE	1.8	--	--	--	NA	--	--	--	--
1,4-DICHLOROBENZENE	75	--	--	--	NA	--	--	--	--
1,4-DIOXANE	3	--	--	--	NA	--	--	--	--
2-BUTANONE	700	--	--	--	NA	--	--	--	--
ACETONE	550	--	--	--	NA	--	4.4 J	5.6 J	--
BENZENE	5	--	--	--	NA	--	--	--	--
BROMOMETHANE	0.85	--	--	--	NA	--	--	0.61 J	0.59 J
CARBON DISULFIDE	100	--	--	0.65 J	NA	--	--	--	--
CARBON TETRACHLORIDE	5	--	--	--	NA	--	--	--	--
CHLOROBENZENE	100	--	--	--	NA	--	--	--	--
CHLOROETHANE	3.6	--	--	--	NA	--	--	--	--
CHLOROFORM	80	--	--	0.7 J	NA	--	--	--	--
CHLOROMETHANE	19	--	--	0.57 J	NA	0.33 J	0.39 J	0.32 J	--
CIS-1,2-DICHLOROETHENE	70	--	--	2.9	NA	0.79 J	2.1	--	--
CYCLOHEXANE	NA	--	--	--	NA	--	--	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	NA	--	--	--	--
ETHYLBENZENE	700	--	--	--	NA	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	NA	--	--	--	--
M+P-XYLENES	NA	--	--	--	NA	--	--	--	--
METHYL CYCLOHEXANE	NA	--	--	--	NA	--	--	--	--
METHYL TERT-BUTYL ETHER	20	--	--	--	NA	--	--	--	--
METHYLENE CHLORIDE	5	--	--	--	NA	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	NA	--	--	--	--
TETRACHLOROETHENE	5	--	--	--	NA	--	--	--	--
TOLUENE	1000	--	--	--	NA	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	--	NA	--	--	--	--
TRICHLOROETHENE	5	1.2	0.66 J	102	NA	1	2.9	--	2.7

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION	MDE Groundwater Standard[1,2]	MRC-MW88B		MRC-MW90B	MRC-MW91A	MRC-MW92C	MRC-MW93A	MRC-MW94B	MRC-MW95B
SAMPLE ID		MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215	MRC-MW-92C-042315	MRC-MW-93A-051415	MRC-MW-94B-043015	MRC-MW-95B-043015
SAMPLE DATE		20150429	20150501	20150518	20150422	20150423	20150514	20150430	20150430
TRICHLOROFLUOROMETHANE	NA	--	--	--	NA	--	--	--	--
VINYL CHLORIDE	2	--	--	--	NA	--	--	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	5.4	4.1	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	NA	NA	NA	--	1.2 J	NA	NA
ARSENIC	10	NA	NA	NA	NA	--	41	NA	NA
BARIUM	2000	NA	NA	NA	NA	150	1300	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	0.32 J	74	NA	NA
CADMIUM	5	NA	NA	NA	NA	--	5.3	NA	NA
CHROMIUM	100	NA	NA	NA	NA	1.5 J	180	NA	NA
COBALT	NA	NA	NA	NA	NA	36	5300	NA	NA
COPPER	1300	NA	NA	NA	NA	--	300	NA	NA
IRON	300	NA	NA	NA	NA	24900	236000	NA	NA
LEAD	15	NA	NA	NA	NA	--	86	NA	NA
MANGANESE	50	NA	NA	NA	NA	1300	11500	NA	NA
MERCURY	2	NA	NA	NA	NA	--	--	NA	NA
MOLYBDENUM	NA	NA	NA	NA	NA	1.7 J	15	NA	NA
NICKEL	73	NA	NA	NA	NA	28	5600	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	--	120	NA	NA
SILVER	100	NA	NA	NA	NA	--	--	NA	NA
THALLIUM	2	NA	NA	NA	NA	--	0.82 J	NA	NA
VANADIUM	3.7	NA	NA	NA	NA	--	130	NA	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION	MDE Groundwater Standard[1,2]	MRC-MW88B		MRC-MW90B	MRC-MW91A	MRC-MW92C	MRC-MW93A	MRC-MW94B	MRC-MW95B
SAMPLE ID		MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215	MRC-MW-92C-042315	MRC-MW-93A-051415	MRC-MW-94B-043015	MRC-MW-95B-043015
SAMPLE DATE		20150429	20150501	20150518	20150422	20150423	20150514	20150430	20150430
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	0.62	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW96A	MRC-MW96B	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-96A-051115	MRC-MW-96B-051115	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE		20150511	20150511	20150518	20150518	20150518	20150518	20150506	20150506
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	--	NA	41.7	0.66 J	--
1,1,2-TRICHLOROETHANE	5	--	--	--	--	NA	1.8	--	0.45 J
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	--	NA	--	--	--
1,1-DICHLOROETHANE	90	--	--	3.8	3.8	NA	137	5.4	25.4
1,1-DICHLOROETHENE	7	96.5 J	--	6.3	6.3	NA	345	3.9	89.6
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	NA	--	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	NA	--	--	--
1,2-DICHLOROBENZENE	600	--	--	--	--	NA	--	--	--
1,2-DICHLOROETHANE	5	--	--	--	--	NA	--	--	--
1,2-DICHLOROPROPANE	5	--	--	--	--	NA	--	--	--
1,3-DICHLOROBENZENE	1.8	--	--	--	--	NA	--	--	--
1,4-DICHLOROBENZENE	75	--	--	--	--	NA	--	--	--
1,4-DIOXANE	3	--	--	--	--	NA	121 J	--	60.6 J
2-BUTANONE	700	--	--	--	--	NA	--	--	--
ACETONE	550	--	--	--	--	NA	--	--	--
BENZENE	5	0.98 J	646	--	--	NA	4.2	--	0.24 J
BROMOMETHANE	0.85	--	--	--	--	NA	--	--	--
CARBON DISULFIDE	100	--	0.27 J	--	--	NA	--	--	--
CARBON TETRACHLORIDE	5	--	--	--	--	NA	--	--	--
CHLOROBENZENE	100	--	--	--	--	NA	--	--	--
CHLOROETHANE	3.6	--	--	--	--	NA	40.1	--	--
CHLOROFORM	80	--	--	--	--	NA	0.99 J	--	0.48 J
CHLOROMETHANE	19	--	--	--	--	NA	--	--	--
CIS-1,2-DICHLOROETHENE	70	47400	8.8	1.2	1.2	NA	31.5	2.3	40.7
CYCLOHEXANE	NA	--	13.8	--	--	NA	--	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	NA	--	--	--
ETHYLBENZENE	700	1.1 J	10.6	--	--	NA	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	13.2	--	--	NA	0.46 J	--	--
M+P-XYLENES	NA	--	60.4	--	--	NA	--	--	--
METHYL CYCLOHEXANE	NA	--	--	--	--	NA	--	--	--
METHYL TERT-BUTYL ETHER	20	--	35.2	--	--	NA	--	--	--
METHYLENE CHLORIDE	5	--	--	--	--	NA	9.1	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	103	--	--	NA	--	--	--
TETRACHLOROETHENE	5	--	--	0.51 J	0.51 J	NA	6.1	--	0.9 J
TOLUENE	1000	6.6 J	2	--	--	NA	--	--	--
TRANS-1,2-DICHLOROETHENE	100	104 J	1.6	--	--	NA	--	--	--
TRICHLOROETHENE	5	3870	18.5	9.1	9.1	NA	554	13.8	245

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION		MRC-MW96A	MRC-MW96B	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-96A-051115	MRC-MW-96B-051115	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE		20150511	20150511	20150518	20150518	20150518	20150518	20150506	20150506
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	NA	0.45 J	--	--
VINYL CHLORIDE	2	57.8 J	0.73 J	--	--	NA	1.6	--	0.44 J
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	4.3	1.1	3.8	3.8	NA	138	3.6	69.4
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	--	--	--	--	NA	--
ARSENIC	10	--	1.4 J	--	--	--	--	NA	--
BARIUM	2000	270	670	45	45.5	46	41	NA	72
BERYLLIUM	4	14	9.8	--	--	--	8.4	NA	0.48 J
CADMIUM	5	0.42 J	2.4	--	--	--	--	NA	--
CHROMIUM	100	1.4 J	1.8 J	6.1	6.3	6.5	--	NA	--
COBALT	NA	510	1100	--	--	--	87	NA	53
COPPER	1300	12	67	--	--	--	--	NA	--
IRON	300	17100	180	330	335	340	18500	NA	28300
LEAD	15	0.89 J	2.1 J	--	--	--	--	NA	--
MANGANESE	50	4300	3300	28	32.5	37	2700	NA	1600
MERCURY	2	--	--	--	--	--	--	NA	NA
MOLYBDENUM	NA	--	--	--	--	--	--	NA	--
NICKEL	73	410	2100	--	--	--	130	NA	86
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	3.7 J	--	--	--	--	NA	--
SILVER	100	--	--	--	--	--	--	NA	--
THALLIUM	2	--	--	--	--	--	--	NA	--
VANADIUM	3.7	--	--	--	0.58	0.79 J	--	NA	0.8 J
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION		MRC-MW96A	MRC-MW96B	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-96A-051115	MRC-MW-96B-051115	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE		20150511	20150511	20150518	20150518	20150518	20150518	20150506	20150506
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	--	3.6	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	--	--	--	--	NA	NA	--	--
1,1,2-TRICHLOROETHANE	5	--	--	--	--	NA	NA	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	--	NA	NA	--	--
1,1-DICHLOROETHANE	90	0.82 J	5.6	--	--	NA	NA	--	--
1,1-DICHLOROETHENE	7	1	1.8	--	2.2	NA	NA	--	--
1,2,3-TRICHLOROBENZENE	NA	--	--	--	--	NA	NA	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	--	--	NA	NA	--	--
1,2-DICHLOROBENZENE	600	--	--	--	--	NA	NA	--	--
1,2-DICHLOROETHANE	5	--	--	--	--	NA	NA	--	--
1,2-DICHLOROPROPANE	5	--	--	--	--	NA	NA	--	--
1,3-DICHLOROBENZENE	1.8	--	--	--	--	NA	NA	--	--
1,4-DICHLOROBENZENE	75	--	--	--	--	NA	NA	--	--
1,4-DIOXANE	3	--	--	--	--	NA	NA	--	--
2-BUTANONE	700	--	--	--	--	NA	NA	--	--
ACETONE	550	--	4.8 J	--	--	NA	NA	--	--
BENZENE	5	--	--	0.42 J	0.38 J	NA	NA	--	--
BROMOMETHANE	0.85	--	--	--	--	NA	NA	--	--
CARBON DISULFIDE	100	--	--	--	--	NA	NA	--	--
CARBON TETRACHLORIDE	5	--	--	--	--	NA	NA	--	--
CHLOROBENZENE	100	--	--	--	--	NA	NA	--	--
CHLOROETHANE	3.6	--	7	--	--	NA	NA	--	--
CHLOROFORM	80	--	--	--	--	NA	NA	--	--
CHLOROMETHANE	19	--	0.33 J	--	--	NA	NA	--	--
CIS-1,2-DICHLOROETHENE	70	39.6	2	2.3	482	NA	NA	--	--
CYCLOHEXANE	NA	--	--	1.2	--	NA	NA	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	NA	NA	--	--
ETHYLBENZENE	700	--	--	--	--	NA	NA	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	NA	NA	--	--
M+P-XYLENES	NA	--	--	--	--	NA	NA	--	--
METHYL CYCLOHEXANE	NA	--	--	0.63 J	--	NA	NA	--	--
METHYL TERT-BUTYL ETHER	20	--	--	--	--	NA	NA	--	--
METHYLENE CHLORIDE	5	--	--	--	--	NA	NA	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	NA	NA	--	--
TETRACHLOROETHENE	5	--	--	--	--	NA	NA	--	--
TOLUENE	1000	--	--	--	--	NA	NA	--	--
TRANS-1,2-DICHLOROETHENE	100	1.7	--	--	6 J	NA	NA	--	--
TRICHLOROETHENE	5	7.1	2	0.42 J	123	NA	NA	--	--

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428
TRICHLOROFLUOROMETHANE	NA	--	--	--	--	NA	NA	--	--
VINYL CHLORIDE	2	1.9	--	0.38 J	0.39 J	NA	NA	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	--	--	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	NA	NA	NA	--	NA	NA	NA	--
ARSENIC	10	NA	NA	NA	--	NA	NA	NA	1.6 J
BARIUM	2000	NA	NA	NA	40	NA	NA	NA	58
BERYLLIUM	4	NA	NA	NA	15	NA	NA	NA	8.7
CADMIUM	5	NA	NA	NA	1.1 J	NA	NA	NA	0.49 J
CHROMIUM	100	NA	NA	NA	0.91 J	NA	NA	NA	0.89 J
COBALT	NA	NA	NA	NA	410	NA	NA	NA	81
COPPER	1300	NA	NA	NA	3.2 J	NA	NA	NA	8.4
IRON	300	NA	NA	NA	--	NA	NA	NA	--
LEAD	15	NA	NA	NA	--	NA	NA	NA	--
MANGANESE	50	NA	NA	NA	350	NA	NA	NA	530
MERCURY	2	NA	NA	NA	--	NA	NA	NA	--
MOLYBDENUM	NA	NA	NA	NA	--	NA	NA	NA	--
NICKEL	73	NA	NA	NA	580	NA	NA	NA	89
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	--	NA	NA	NA	5.6 J
SILVER	100	NA	NA	NA	--	NA	NA	NA	--
THALLIUM	2	NA	NA	NA	--	NA	NA	NA	--
VANADIUM	3.7	NA	NA	NA	--	NA	NA	NA	--
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	NA	--	--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	NA	--	--	--	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	--	--	--	--	--	--	--
1,1-DICHLOROETHANE	90	NA	0.33 J	--	--	--	1.1	--	--
1,1-DICHLOROETHENE	7	NA	2.2	--	1.7	2.2	1.1	0.75 J	--
1,2,3-TRICHLOROBENZENE	NA	NA	--	--	--	--	--	--	--
1,2,4-TRICHLOROBENZENE	70	NA	--	--	--	--	--	--	--
1,2-DICHLOROBENZENE	600	NA	--	--	--	--	--	--	--
1,2-DICHLOROETHANE	5	NA	--	--	--	--	--	--	--
1,2-DICHLOROPROPANE	5	NA	--	--	--	--	--	--	--
1,3-DICHLOROBENZENE	1.8	NA	--	--	--	--	--	--	--
1,4-DICHLOROBENZENE	75	NA	--	--	--	--	--	--	--
1,4-DIOXANE	3	NA	--	--	--	--	--	--	--
2-BUTANONE	700	NA	--	--	--	--	--	--	--
ACETONE	550	NA	--	--	8 J	20.9	--	3.5 J	--
BENZENE	5	NA	--	--	--	123	2.1	47.4	--
BROMOMETHANE	0.85	NA	--	--	--	--	--	--	--
CARBON DISULFIDE	100	NA	0.95 J	--	--	--	--	0.48 J	0.29 J
CARBON TETRACHLORIDE	5	NA	--	--	--	--	--	--	--
CHLOROBENZENE	100	NA	--	--	--	--	--	--	--
CHLOROETHANE	3.6	NA	--	--	--	--	--	--	--
CHLOROFORM	80	NA	--	--	--	--	--	--	--
CHLOROMETHANE	19	NA	--	--	--	--	--	0.34 J	--
CIS-1,2-DICHLOROETHENE	70	NA	0.91 J	--	45.4	302	8.3	5.8	--
CYCLOHEXANE	NA	NA	--	--	--	1.9	--	0.85 J	--
DICHLORODIFLUOROMETHANE	NA	NA	--	--	--	--	--	--	--
ETHYLBENZENE	700	NA	--	--	--	--	--	2.2	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	NA	--	--	--	1.9	--	--	--
M+P-XYLENES	NA	NA	--	--	--	0.64 J	--	2.2	--
METHYL CYCLOHEXANE	NA	NA	--	--	--	--	--	--	--
METHYL TERT-BUTYL ETHER	20	NA	--	--	--	11.2	--	2.8	--
METHYLENE CHLORIDE	5	NA	--	--	--	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	--	--	--	6.5	--	2.3	--
TETRACHLOROETHENE	5	NA	--	--	--	--	--	--	--
TOLUENE	1000	NA	--	--	0.4 J	0.33 J	--	--	--
TRANS-1,2-DICHLOROETHENE	100	NA	--	--	1.2	28.8	0.41 J	--	--
TRICHLOROETHENE	5	NA	12.8	--	--	87.2	33	38.8	0.38 J

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518
TRICHLOROFLUOROMETHANE	NA	NA	--	--	--	--	--	--	--
VINYL CHLORIDE	2	NA	--	--	34	19.1	0.57 J	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	NA	NA	NA	NA	NA	2.8	3.8	0.75
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	NA	1.7 J	--	--	--	0.78 J	NA
ARSENIC	10	--	NA	1.2 J	4.4	--	--	1.2 J	NA
BARIUM	2000	85	NA	52	190	390	1200	280	NA
BERYLLIUM	4	3.1	NA	--	0.67 J	12	10	--	NA
CADMIUM	5	0.43 J	NA	0.82 J	--	1.2	0.99 J	--	NA
CHROMIUM	100	--	NA	5.9 J	12	1.2 J	1.7 J	4	NA
COBALT	NA	34	NA	11 J	120	970	1100	100	NA
COPPER	1300	8.5	NA	8.6 J	14	30	3.1 J	10	NA
IRON	300	24 J	NA	2200	67900	390	30400	1500	NA
LEAD	15	--	NA	15	5.9	1.8 J	--	2.2 J	NA
MANGANESE	50	100	NA	750 J	1400	3400	23100	530	NA
MERCURY	2	--	NA	0.23 J	--	--	--	--	NA
MOLYBDENUM	NA	--	NA	--	0.79 J	--	--	--	NA
NICKEL	73	29	NA	17 J	73	1200	690	96	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	4 J	NA	--	--	--	--	--	NA
SILVER	100	--	NA	--	--	--	--	--	NA
THALLIUM	2	--	NA	--	--	--	--	--	NA
VANADIUM	3.7	--	NA	6.3 J	26	1.1 J	0.97 J	3.8	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MDE Groundwater Standard[1,2]	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	NA	--	0.88	0.8 J	1.6 J	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION		MRC-MW111B	MRC-MW112A	MRC-MW113A			MRC-MW114A	MRC-MW115A	MRC-MW116A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-111B-051815	MRC-MW-112A-042815	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415	MRC-MW-115A-051415	MRC-MW-116A-042215
SAMPLE DATE		20150518	20150428	20150427	20150427	20150427	20150414	20150514	20150422
Volatile organic compounds (µg/L)									
1,1,1-TRICHLOROETHANE	200	1.7	--	--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	5	2.4	--	--	--	--	--	--	--
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	--	--	--	--	--	--	--	--
1,1-DICHLOROETHANE	90	39.3	--	1.8	1.7	1.6	--	--	--
1,1-DICHLOROETHENE	7	463	--	0.36 J	0.33	0.3 J	--	--	--
1,2,3-TRICHLOROBENZENE	NA	--	--	43	43.15	43.3	97	--	--
1,2,4-TRICHLOROBENZENE	70	--	--	131	132	133	260	--	--
1,2-DICHLOROBENZENE	600	--	--	13.8	13.65	13.5	17.4	--	--
1,2-DICHLOROETHANE	5	--	--	1.2	1.15	1.1	903	--	--
1,2-DICHLOROPROPANE	5	--	--	--	--	--	6.4	--	--
1,3-DICHLOROBENZENE	1.8	--	--	17.5	17.45	17.4	4.9	--	--
1,4-DICHLOROBENZENE	75	--	0.36 J	37.7	37.6	37.5	49.2	--	--
1,4-DIOXANE	3	140 J	--	--	--	--	--	--	--
2-BUTANONE	700	--	--	--	--	--	--	--	--
ACETONE	550	--	--	--	--	--	--	--	--
BENZENE	5	7.9	0.31 J	0.48 J	0.47	0.46 J	6	--	--
BROMOMETHANE	0.85	--	--	--	--	--	--	--	0.66 J
CARBON DISULFIDE	100	--	--	--	--	--	0.82 J	--	--
CARBON TETRACHLORIDE	5	--	--	0.95 J	0.905	0.86 J	--	--	--
CHLOROBENZENE	100	--	2.2	33	32.55	32.1	366	--	--
CHLOROETHANE	3.6	--	--	--	--	--	--	--	--
CHLOROFORM	80	0.95 J	--	1.1	1.035	0.97 J	--	--	--
CHLOROMETHANE	19	--	--	--	--	--	--	--	--
CIS-1,2-DICHLOROETHENE	70	28.4	1.8	9.5	8.95	8.4	0.7 J	--	--
CYCLOHEXANE	NA	--	--	--	--	--	--	--	--
DICHLORODIFLUOROMETHANE	NA	--	--	--	--	--	--	--	--
ETHYLBENZENE	700	--	--	--	--	--	--	--	--
HEXACHLOROBUTADIENE	0.86	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	66	--	--	--	--	--	--	--	--
M+P-XYLENES	NA	--	--	--	--	--	--	--	--
METHYL CYCLOHEXANE	NA	--	--	--	--	--	--	--	--
METHYL TERT-BUTYL ETHER	20	--	--	--	--	--	--	--	--
METHYLENE CHLORIDE	5	--	--	--	--	--	--	--	--
NAPHTHALENE	0.65	NA	NA	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	--	--	--	--	--	--	--	--
TETRACHLOROETHENE	5	4.8	--	45.7	45.25	44.8	3.3	--	--
TOLUENE	1000	--	--	--	--	--	--	--	--
TRANS-1,2-DICHLOROETHENE	100	--	--	0.38 J	0.37	0.36 J	--	--	--
TRICHLOROETHENE	5	1270	2.5	23.5	22.8	22.1	4.7	--	--

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland

LOCATION	MDE Groundwater Standard[1,2]	MRC-MW111B	MRC-MW112A	MRC-MW113A			MRC-MW114A	MRC-MW115A	MRC-MW116A
SAMPLE ID		MRC-MW-111B-051815	MRC-MW-112A-042815	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415	MRC-MW-115A-051415	MRC-MW-116A-042215
SAMPLE DATE		20150518	20150428	20150427	20150427	20150427	20150414	20150514	20150422
TRICHLOROFLUOROMETHANE	NA	--	--	1010	985.5	961	187	--	--
VINYL CHLORIDE	2	1.2	1.3	0.34 J	0.245	--	3.5	--	--
Volatile gases (µg/L)									
ETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile organic compounds (µg/L)									
1,4-DIOXANE	3	182	NA	5.4	5.5	5.6	0.85	NA	NA
Polychlorinated biphenyl-Aroclors (µg/L)									
TOTAL AROCLOR	0.5	NA	NA	NA	NA	NA	--	NA	NA
Polychlorinated biphenyl homologs (µg/L)									
MONOCHLOROBIPHENYLS	0.5	NA	NA	--	0.006225	0.011	NA	NA	NA
TRICHLOROBIPHENYLS	0.5	NA	NA	NA	NA	NA	NA	NA	NA
Metals (µg/L)									
ANTIMONY	6	--	--	NA	NA	NA	NA	NA	NA
ARSENIC	10	3.8	--	NA	NA	NA	NA	NA	NA
BARIUM	2000	90	120	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	0.46 J	9.1	NA	NA	NA	NA	NA	NA
CADMIUM	5	--	--	NA	NA	NA	NA	NA	NA
CHROMIUM	100	--	0.92 J	NA	NA	NA	NA	NA	NA
COBALT	NA	63	74	NA	NA	NA	NA	NA	NA
COPPER	1300	--	--	NA	NA	NA	NA	NA	NA
IRON	300	40100	10800	NA	NA	NA	NA	NA	NA
LEAD	15	--	--	NA	NA	NA	NA	NA	NA
MANGANESE	50	1200	280	NA	NA	NA	NA	NA	NA
MERCURY	2	--	--	NA	NA	NA	NA	NA	NA
MOLYBDENUM	NA	--	--	NA	NA	NA	NA	NA	NA
NICKEL	73	110	99	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	--	--	NA	NA	NA	NA	NA	NA
SILVER	100	--	--	NA	NA	NA	NA	NA	NA
THALLIUM	2	--	--	NA	NA	NA	NA	NA	NA
VANADIUM	3.7	--	1.7 J	NA	NA	NA	NA	NA	NA
Dissolved metals (µg/L)									
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-3

Detected Analytes and Screening Level Exceedances in Groundwater Samples - 2015
Lockheed Martin Middle River Complex. Middle River, Maryland
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LOCATION		MRC-MW111B	MRC-MW112A	MRC-MW113A			MRC-MW114A	MRC-MW115A	MRC-MW116A
SAMPLE ID	MDE Groundwater Standard[1,2]	MRC-MW-111B-051815	MRC-MW-112A-042815	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415	MRC-MW-115A-051415	MRC-MW-116A-042215
SAMPLE DATE		20150518	20150428	20150427	20150427	20150427	20150414	20150514	20150422
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Filtered (0.45) metals (µg/L)									
BARIUM	2000	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	4	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	5	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	73	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	50	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous parameters (µg/L)									
PERCHLORATE	2.6	NA	NA	0.17 J	0.155	0.14 J	NA	NA	NA
Miscellaneous parameters (mg/L)									
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shaded cells indicate detected concentration exceeds groundwater screening level

1 Screening levels for all analytes except 1,4-dioxane are Maryland Department of the Environment (MDE) groundwater standards (MDE, 2008).

2 The screening level for 1.4-dioxane is State of California drinking water action level (MDE standard not available).

3 A "B" was inadvertantly used for the Sample ID for well MRC-MW77A.

-- not detected

MDE - Maryland Department of the Environment

µg/L - micrograms per liter

mg/L - milligrams per liter

J - estimated concentration

NA - not applicable (second column) or not analyzed (all other columns)

-D (in Sample ID) - duplicate sample

AVG - avverage concentration for the sample and its duplicate (i.e., "D") sample

Table 4-4

Summary of Metals Exceeding Groundwater Screening Levels-2015
Lockheed Martin Middle River Complex, Middle River, Maryland

Parameter	Maryland Department of the Envrionment groundwater standard[1]	Total metals			
		Detections exceeding screening level		Maximum concentration (µg/L)	Exceedance factor (maximum concentration/ screening level)
		(quantity)	(percent)		
Total metals (µg/L)					
MANGANESE	50	78	99%	45900	918
IRON	300	65	87%	236000	787
NICKEL	73	50	64%	14200	195
BERYLLIUM	4	26	42%	300	75
VANADIUM	3.7	13	33%	130	35
CADMIUM	5	3	13%	10 J	2.0
ARSENIC	10	2	6%	41	4.1
SELENIUM	50	1	4%	120	2.4
LEAD	15	1	3%	86	5.7
CHROMIUM	100	1	2%	180	1.8
COPPER	1300	1	2%	2000	1.5
BARIUM	2000	1	1%	2300	1.2
ANTIMONY	6	0	0%	5.6	NA
COBALT	NA	0	0%	8600	NA
MERCURY	2	0	0%	0.43 J	NA
MOLYBDENUM	NA	0	0%	15	NA
POTASSIUM	NA	0	0%	15300	NA
SILVER	100	0	0%	0.9 J	NA
THALLIUM	2	0	0%	1.7	NA

1 Maryland Department of the Environment Soil and Groundwater Standards, Interim Final 2.1, June 2008.

J - analyte present at estimated concentration

NA - no screening level available or not applicable because maximum concentration is below the screenng level

µg/L - micrograms per liter (i.e. parts per billion)

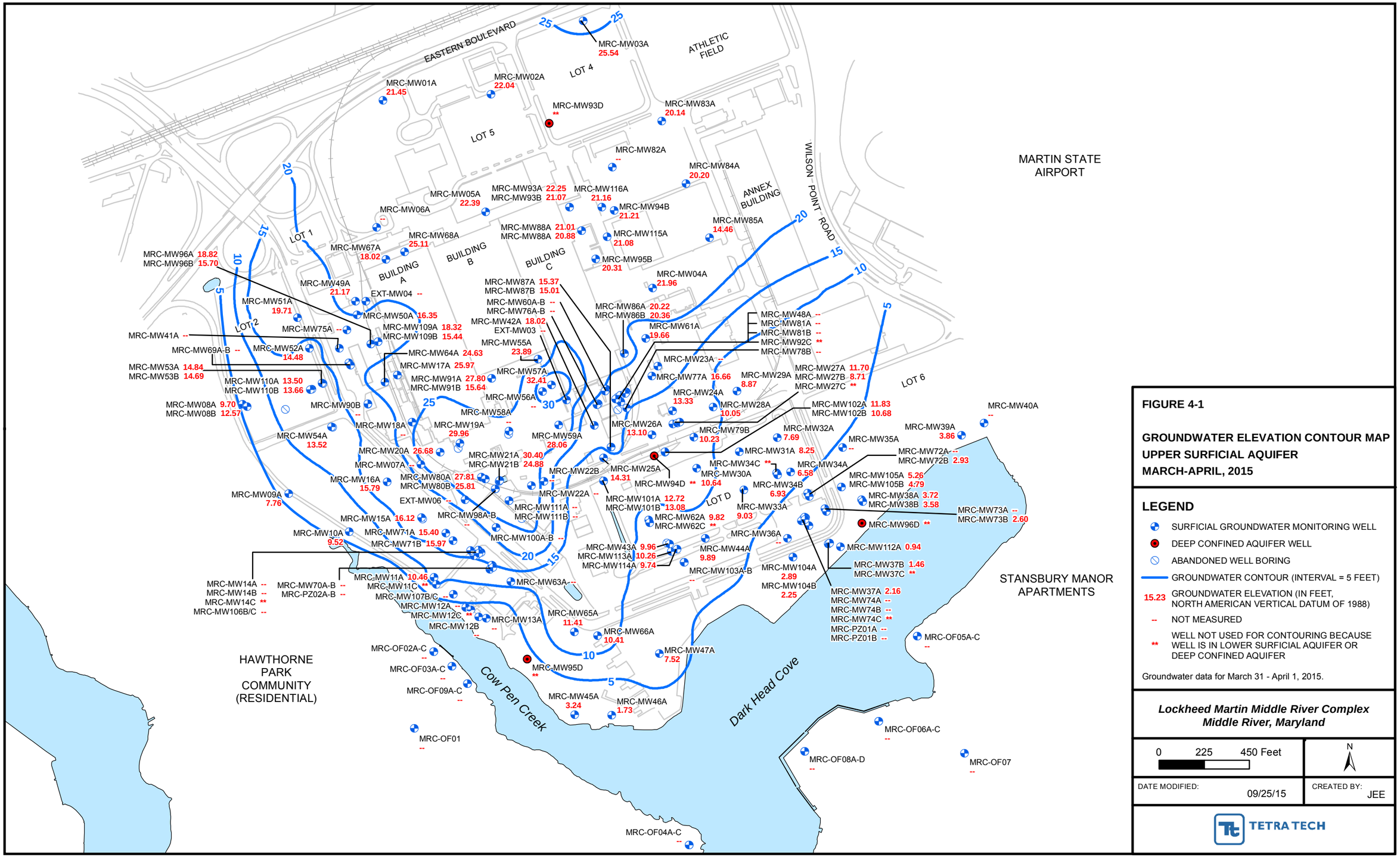

FIGURE 4-1

GROUNDWATER ELEVATION CONTOUR MAP
UPPER SURFICIAL AQUIFER
MARCH-APRIL, 2015

LEGEND

- SURFICIAL GROUNDWATER MONITORING WELL
- DEEP CONFINED AQUIFER WELL
- ABANDONED WELL BORING
- GROUNDWATER CONTOUR (INTERVAL = 5 FEET)
- 15.23 GROUNDWATER ELEVATION (IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988)
- -- NOT MEASURED
- ** WELL NOT USED FOR CONTOURING BECAUSE WELL IS IN LOWER SURFICIAL AQUIFER OR DEEP CONFINED AQUIFER

Groundwater data for March 31 - April 1, 2015.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 09/25/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_contours_may2015_upper.mxd)
09/25/15 -- JEE

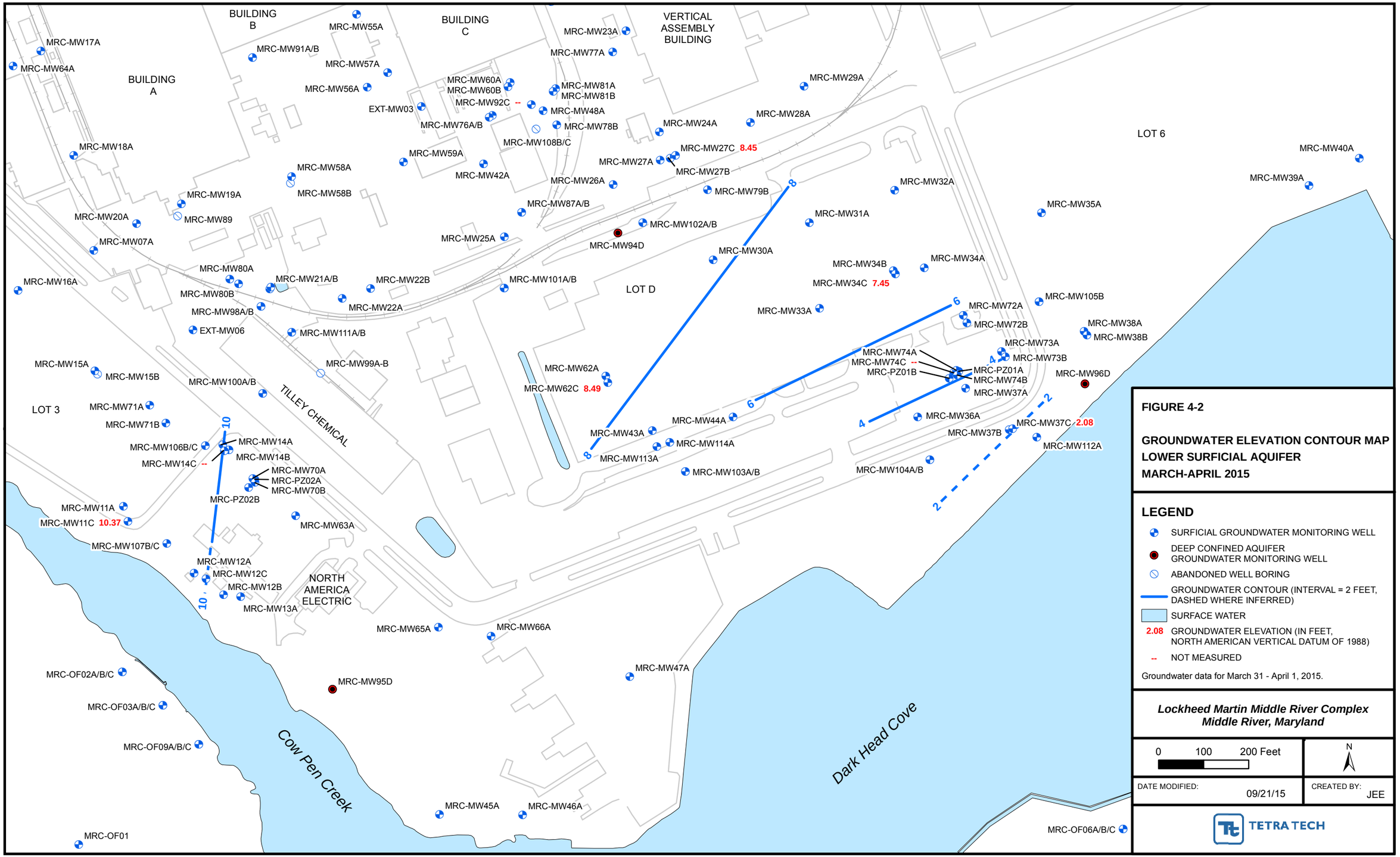

FIGURE 4-2

GROUNDWATER ELEVATION CONTOUR MAP
LOWER SURFICIAL AQUIFER
MARCH-APRIL 2015

LEGEND

- SURFICIAL GROUNDWATER MONITORING WELL
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL
- ABANDONED WELL BORING
- GROUNDWATER CONTOUR (INTERVAL = 2 FEET, DASHED WHERE INFERRED)
- SURFACE WATER
- 2.08 GROUNDWATER ELEVATION (IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988)
- -- NOT MEASURED

Groundwater data for March 31 - April 1, 2015.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 100 200 Feet

N

DATE MODIFIED: 09/21/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_contours_may2015_lower.mxd)
09/21/15 -- JEE

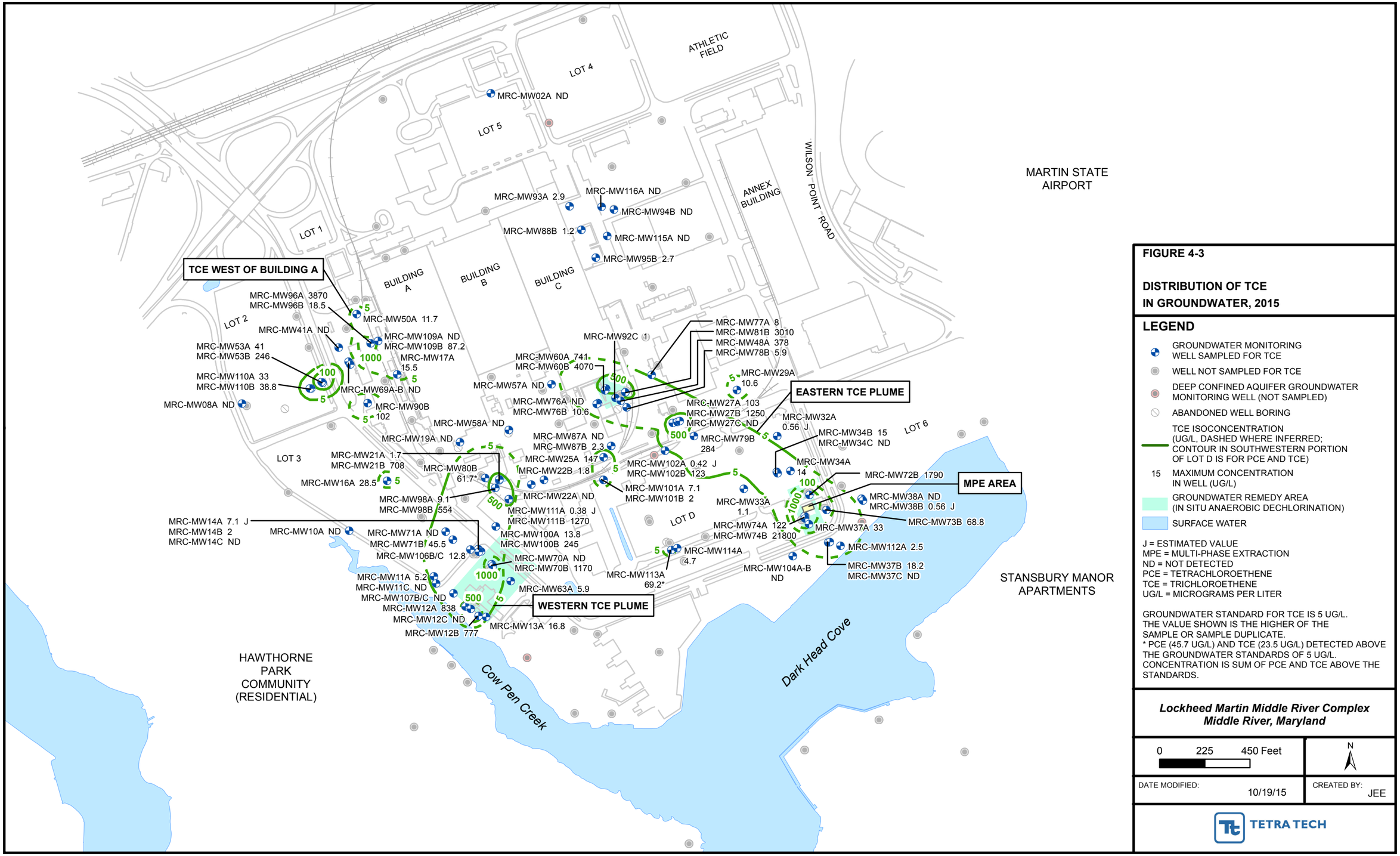

FIGURE 4-3

DISTRIBUTION OF TCE IN GROUNDWATER, 2015

LEGEND

- GROUNDWATER MONITORING WELL SAMPLED FOR TCE
- WELL NOT SAMPLED FOR TCE
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- TCE ISOCONCENTRATION (UG/L, DASHED WHERE INFERRED; CONTOUR IN SOUTHWESTERN PORTION OF LOT D IS FOR PCE AND TCE)
- 15 MAXIMUM CONCENTRATION IN WELL (UG/L)
- GROUNDWATER REMEDY AREA (IN SITU ANAEROBIC DECHLORINATION)
- SURFACE WATER

J = ESTIMATED VALUE
MPE = MULTI-PHASE EXTRACTION
ND = NOT DETECTED
PCE = TETRACHLOROETHENE
TCE = TRICHLOROETHENE
UG/L = MICROGRAMS PER LITER

GROUNDWATER STANDARD FOR TCE IS 5 UG/L.
THE VALUE SHOWN IS THE HIGHER OF THE SAMPLE OR SAMPLE DUPLICATE.
* PCE (45.7 UG/L) AND TCE (23.5 UG/L) DETECTED ABOVE THE GROUNDWATER STANDARDS OF 5 UG/L. CONCENTRATION IS SUM OF PCE AND TCE ABOVE THE STANDARDS.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 10/19/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_tce_2015_v2.mxd)
10/19/15 -- JEE

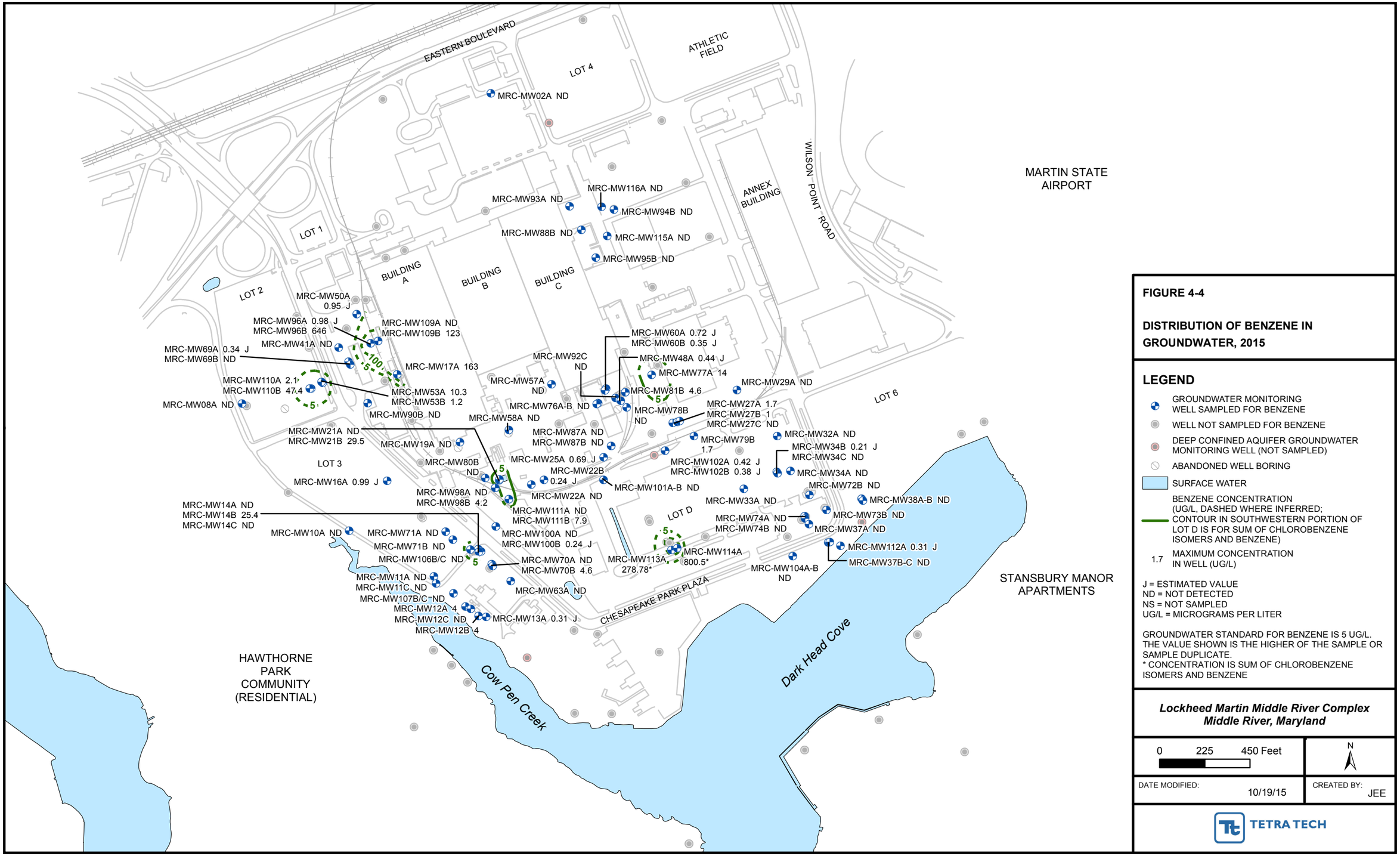

FIGURE 4-4

DISTRIBUTION OF BENZENE IN GROUNDWATER, 2015

LEGEND

- GROUNDWATER MONITORING WELL SAMPLED FOR BENZENE
- WELL NOT SAMPLED FOR BENZENE
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- SURFACE WATER
- BENZENE CONCENTRATION (UG/L, DASHED WHERE INFERRED; CONTOUR IN SOUTHWESTERN PORTION OF LOT D IS FOR SUM OF CHLOROBENZENE ISOMERS AND BENZENE)
- 1.7 MAXIMUM CONCENTRATION IN WELL (UG/L)

J = ESTIMATED VALUE
ND = NOT DETECTED
NS = NOT SAMPLED
UG/L = MICROGRAMS PER LITER

GROUNDWATER STANDARD FOR BENZENE IS 5 UG/L. THE VALUE SHOWN IS THE HIGHER OF THE SAMPLE OR SAMPLE DUPLICATE.
* CONCENTRATION IS SUM OF CHLOROBENZENE ISOMERS AND BENZENE

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 10/19/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_benzene_2015_v2.mxd)
10/19/15 -- KM

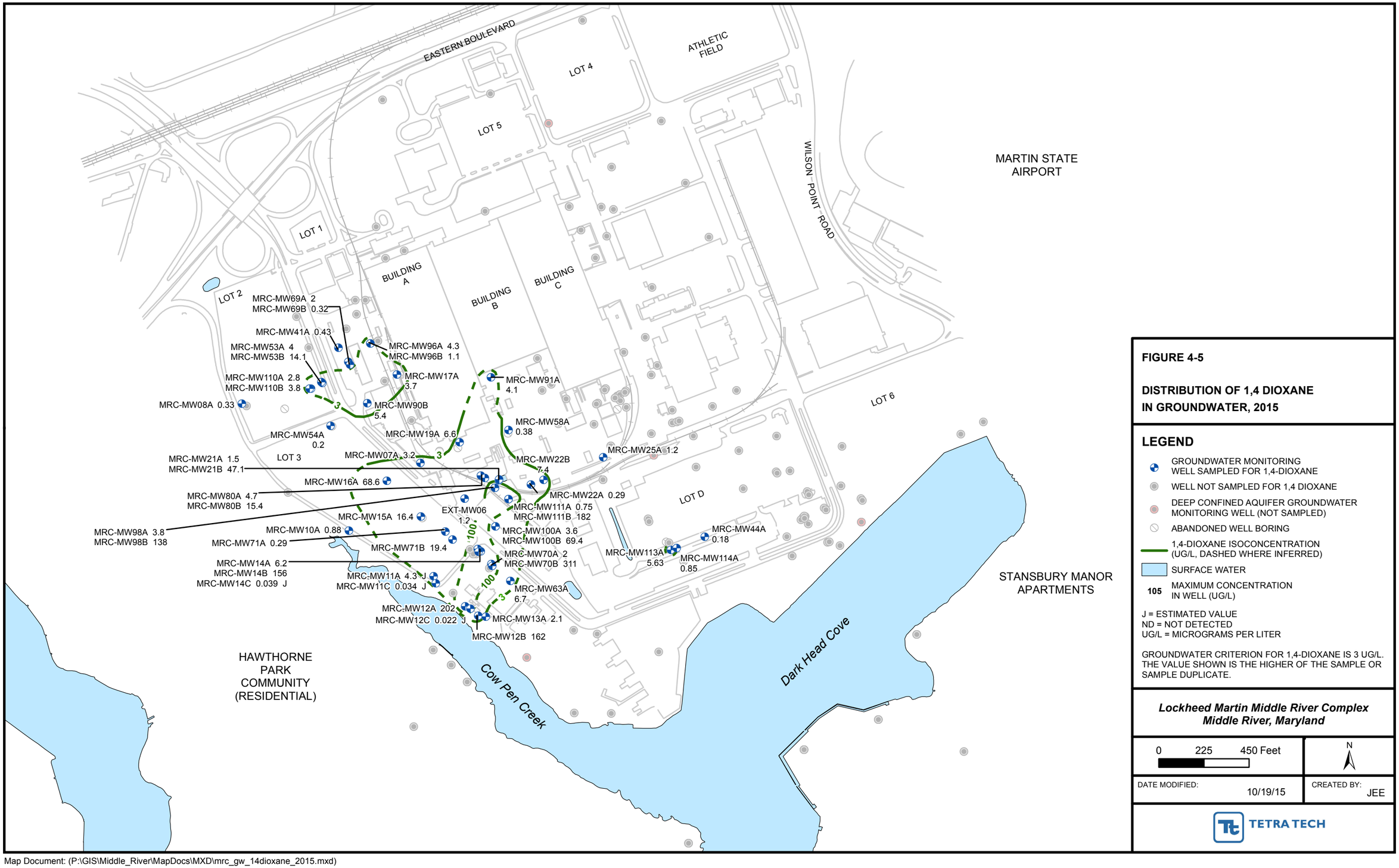

FIGURE 4-5

DISTRIBUTION OF 1,4 DIOXANE IN GROUNDWATER, 2015

LEGEND

- GROUNDWATER MONITORING WELL SAMPLED FOR 1,4-DIOXANE
- WELL NOT SAMPLED FOR 1,4 DIOXANE
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- 1,4-DIOXANE ISOCONCENTRATION (UG/L, DASHED WHERE INFERRED)
- SURFACE WATER
- 105 MAXIMUM CONCENTRATION IN WELL (UG/L)

J = ESTIMATED VALUE
ND = NOT DETECTED
UG/L = MICROGRAMS PER LITER

GROUNDWATER CRITERION FOR 1,4-DIOXANE IS 3 UG/L. THE VALUE SHOWN IS THE HIGHER OF THE SAMPLE OR SAMPLE DUPLICATE.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 10/19/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_14dioxane_2015.mxd)
10/19/15 -- KM

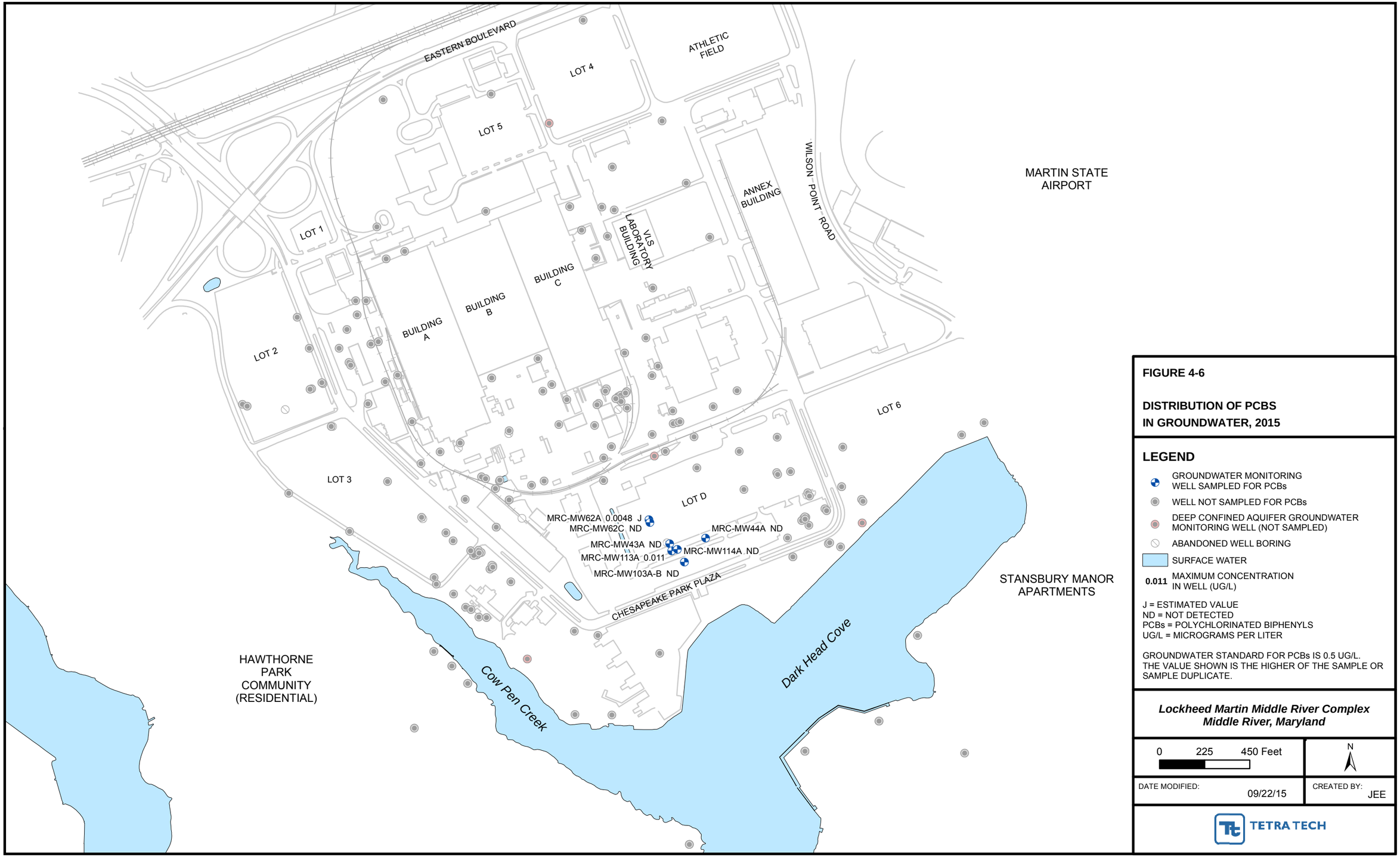

FIGURE 4-6

DISTRIBUTION OF PCBS IN GROUNDWATER, 2015

LEGEND

- GROUNDWATER MONITORING WELL SAMPLED FOR PCBs
- WELL NOT SAMPLED FOR PCBs
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- SURFACE WATER
- **0.011** MAXIMUM CONCENTRATION IN WELL (UG/L)

J = ESTIMATED VALUE
ND = NOT DETECTED
PCBs = POLYCHLORINATED BIPHENYLS
UG/L = MICROGRAMS PER LITER

GROUNDWATER STANDARD FOR PCBs IS 0.5 UG/L.
THE VALUE SHOWN IS THE HIGHER OF THE SAMPLE OR SAMPLE DUPLICATE.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 09/22/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_pcb_2015.mxd)
09/22/15 -- JEE

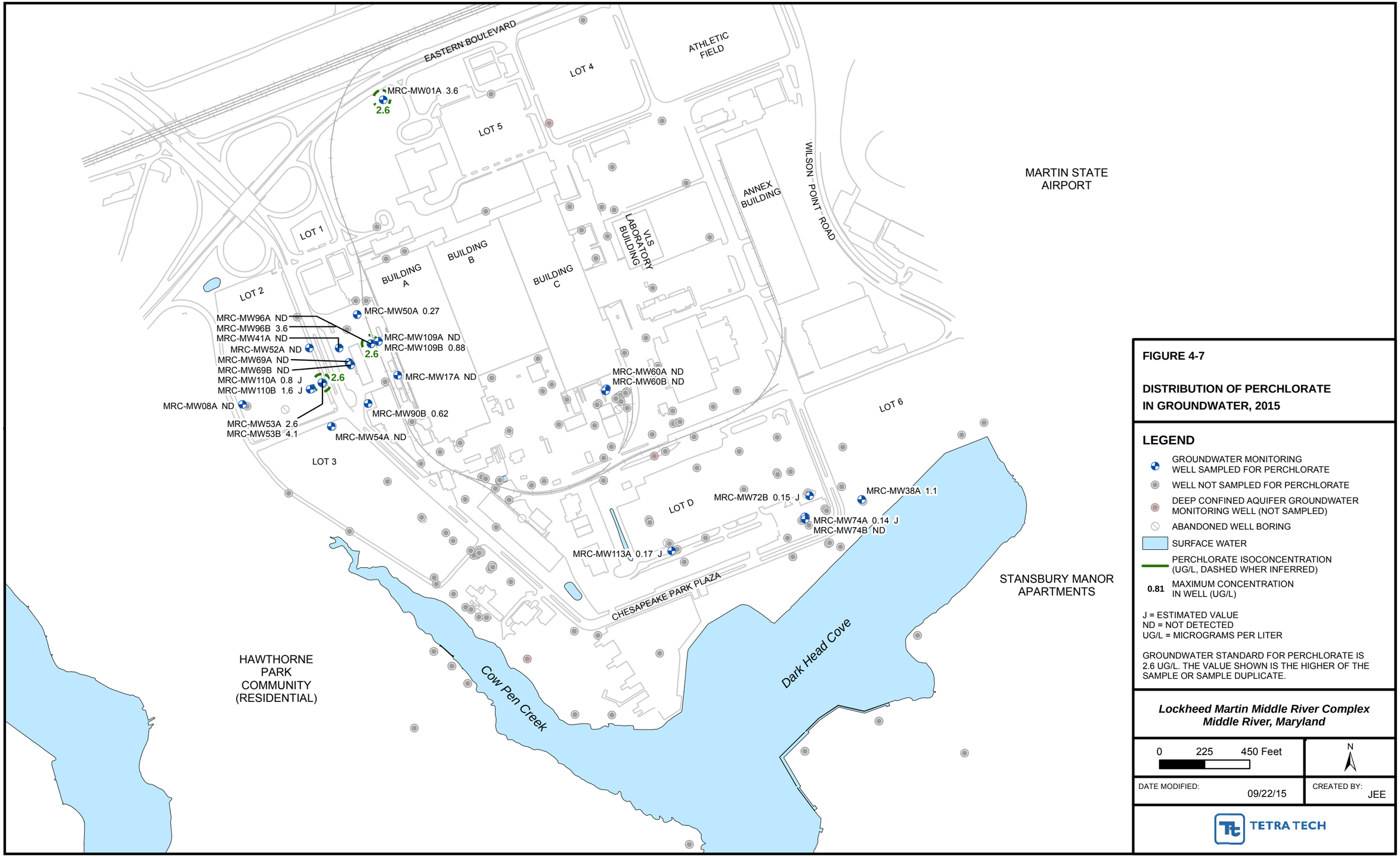

FIGURE 4-7

DISTRIBUTION OF PERCHLORATE IN GROUNDWATER, 2015

LEGEND

- GROUNDWATER MONITORING WELL SAMPLED FOR PERCHLORATE
- WELL NOT SAMPLED FOR PERCHLORATE
- DEEP CONFINED AQUIFER GROUNDWATER MONITORING WELL (NOT SAMPLED)
- ABANDONED WELL BORING
- SURFACE WATER
- PERCHLORATE ISOCONCENTRATION (UG/L, DASHED WHER INFERRED)
- **0.81** MAXIMUM CONCENTRATION IN WELL (UG/L)

J = ESTIMATED VALUE
ND = NOT DETECTED
UG/L = MICROGRAMS PER LITER

GROUNDWATER STANDARD FOR PERCHLORATE IS 2.6 UG/L. THE VALUE SHOWN IS THE HIGHER OF THE SAMPLE OR SAMPLE DUPLICATE.

Lockheed Martin Middle River Complex
Middle River, Maryland

0 225 450 Feet

N

DATE MODIFIED: 09/22/15

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_gw_perchlorate_2015.mxd)
09/22/15 -- JEE

Section 5
Summary

The findings of the 2015 groundwater sampling and analyses and the groundwater level measurements for the Lockheed Martin Corporation (Lockheed Martin) Middle River Complex (MRC) are summarized below:

- All accessible wells were inspected during the 2015 sampling program to assess their need for repairs; 13 wells were repaired in 2015.
- Groundwater samples were collected from monitoring wells in April–June 2015. Samples were analyzed for one or more of the following: volatile organic compounds (VOCs), 1,4-dioxane, total metals, perchlorate, polychlorinated biphenyls (PCBs), natural-attenuation assessment (NAA) parameters, and field water-quality parameters. A round of synoptic groundwater measurements was obtained from the wells on March 31–April 1, 2015.
- Groundwater flow in March–April 2015 is similar to that depicted by previous groundwater investigations. Shallow groundwater follows site topography and flows radially from the hydraulically upgradient northern portion of the Middle River Complex at Eastern Boulevard and immediately south of Buildings A, B, and C to the southeast, south, and southwest toward Dark Head Cove and Cow Pen Creek. Groundwater in the deep surficial-aquifer flows southeasterly from Eastern Boulevard toward Dark Head Cove. March–April surficial-aquifer groundwater elevations are generally higher than those measured in 2014.
- Concentrations of chlorinated volatile organic compounds exceed Maryland groundwater standards at three main areas of the facility and at multiple depths. Trichloroethene (TCE), a common industrial solvent and metal degreaser, is the primary volatile organic compound exceeding its Maryland groundwater standard. Trichloroethene-degradation products, such as dichloroethenes and vinyl chloride (VC), also exceed Maryland groundwater standards at the facility, as do tetrachloroethene (PCE), chlorobenzene compounds, and the fuel-related volatile organic compound benzene.
    - These data confirm three trichloroethene and trichloroethene-degradation-product plumes: the eastern trichloroethene plume (likely originating from a solvent spill south of Building C and possibly related to past handling and storage practices, and from the area of a former underground storage tank [UST] near the aboveground water tanks in Block E).
    - The western trichloroethene plume originates from a solvent spill from a waste-oil tank north of Tilley Chemical and a possible secondary trichloroethene source at the former

wastewater treatment plant south of Tilley Chemical and Chesapeake Park Plaza in Block G.

- A smaller trichloroethene plume is also found west of Building A.

- The eastern and western trichloroethene plumes extend southeast and southwest, respectively, to areas adjacent to Dark Head Cove and Cow Pen Creek. The three source areas for the eastern and western trichloroethene plumes are being addressed as part of the groundwater remedy program (Tetra Tech, 2012a). Trichloroethene has also been detected at several isolated locations in the western portion of the facility, in the southwestern portion of Lot D (Block E), and in previous rounds, east of Building C.

- The maximum concentration of trichloroethene was detected in groundwater near the southern end of the eastern trichloroethene plume at well MW74B and is possibly associated with a recently discovered underground storage tank that was located (and removed) near the former Building D foundation; this tank contained trichloroethene product.

- Other high concentrations of trichloroethene are in the intermediate depth of the surficial aquifer in wells MW60B and MW81B, screened 30 feet below grade. The source(s) of this plume may originate from the south end of the Building C Basement (MW60B), or possibly from spills of material handled near MW60B. The two source areas for the eastern trichloroethene plume (near wells MW60A/B and MW74A/B) are being addressed as part of the groundwater remedy program (Tetra Tech, 2012a).

- Trichloroethene in well MW74B had reduced in previous years by a factor of 21 (from 40,000 micrograms per liter [µg/L] in 2013 to 1,900 µg/L in 2014), but rebounded in 2015 (to 21,800 µg/L). Changes in pumping rates of the multi-phase extraction system and resulting shifts in the plume may explain these concentration changes. This area will be subject to *in situ* anaerobic dechlorination after operation of the multi-phase extraction system is shut down in 2015.

- Benzene concentrations at areas west of Building A, in the western trichloroethene plume and near the vertical-assembly building, exceed the state groundwater standard of five micrograms per liter. However, these concentrations decline rapidly to levels below the standard at nearby downgradient wells. Most wells with benzene exceedances in 2015 exhibited increases in concentrations from 2014–2015.

- Chlorobenzene and chlorobenzene compounds exceed groundwater standards in two shallow wells (MW113A and MW114A) in the southwestern portion of Lot D (Tax Block E). Chlorobenzene compounds exceeding the groundwater standards include chlorobenzene, 1,2,4-trichlorobenzene, and 1,3-dichlorobenzene. 1,2-Dichloropropane and several chlorinated volatile organic compounds (including tetrachloroethene, trichloroethene, 1,2-dichloroethane, and vinyl chloride) also exceed their groundwater standards at one or more of these wells.

- 1,4-Dioxane was detected in several wells in the western trichloroethene plume. The highest concentrations occur primarily in the upper and intermediate surficial-aquifer wells. The highest 1,4-dioxane concentrations occur along a southwesterly line originating

just north of the Tilley Chemical building to Cow Pen Creek. 1,4-Dioxane exceedances were detected in six wells west and southwest of Building A. 1,4-Dioxane also exceeds the screening level at newly installed well MW113A, in the southwestern corner of Lot D. 1,4-Dioxane concentrations over time have been steady to slightly decreasing in the western trichloroethene plume and at wells outside of the groundwater remedy areas.

- Polychlorinated biphenyls (PCBs), analyzed and reported as Aroclors, were not detected in groundwater samples collected from five wells in the southwestern portion of Lot D (Tax Block E).

- Polychlorinated biphenyl homologs were analyzed and reported as homolog groups in groundwater in and downgradient of a deep polychlorinated biphenyl deposit in former Building D. They were only detected in groundwater samples from two wells (MW62A and newly installed well MW113A). However, the detected concentrations were more than one order of magnitude (i.e., 10 times) below the groundwater standard. Only monochlorobiphenyls were detected downgradient of the Block E polychlorinated biphenyl source area (i.e., near well MW43A) at well MW113A; the more toxic and less mobile higher-chain chlorobiphenyls do not appear to be migrating from the Block E source area.

- Concentrations of 12 metals exceed Maryland groundwater standards in one or more groundwater samples this round. Concentrations of manganese, iron, and nickel exceed their respective standards most frequently, with maxima exceeding standards by more than two orders of magnitude (greater than 100 times). Other metals exceed their respective standards less frequently, with the maxima of most of those metals less than one order of magnitude above their respective groundwater standards.

- Perchlorate was detected in 13 of 25 groundwater samples analyzed in 2015, including newly installed well MW113A in the southwestern portion of Lot D (Block E). Only three concentrations (at wells MW53B, MW01A, and MW96B) exceed its groundwater standard. One of the exceedances is at a background well (MW01A) near Eastern Boulevard. Several of the higher concentrations of perchlorate (at wells MW53B, MW96B, and MW110B) are west of Building A, in the western portion of the Middle River Complex where elevated concentrations of trichloroethene and benzene are also present.

- We recommend removing perchlorate from future groundwater sampling at Middle River Complex. Groundwater samples from 89 wells were collected for perchlorate analysis from 2009–2015. Wells in areas of elevated trichloroethene concentrations (e.g., MW14A/B, MW53A/B, MW60A/B, MW74A/B, MW96A/B), have been sampled for perchlorate, but concentrations above the Maryland Department of the Environment groundwater standard (2.6 µg/L) were found only at the trichloroethene areas west of Building A (wells MW53A and MW96B) and at a background location (MW01A). Perchlorate is not a contaminant of concern in the groundwater risk assessment and it is not required to assess the groundwater remedy's effectiveness.

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Section 6
References

1. Maryland Department of the Environment (MDE), 2008. *Soil and Groundwater Cleanup Standards, Interim Final Guidance.* Update No. 2.1. June.

2. Tetra Tech, Inc. (Tetra Tech), 2006. *Site Characterization Report, Revision 1.0*. Lockheed Martin Middle River Complex. May.

3. Tetra Tech, Inc. (Tetra Tech), 2009. *Groundwater Monitoring Report, July–August 2008, Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. May.

4. Tetra Tech, Inc. (Tetra Tech), 2012a. *Final Groundwater Response Action Plan, Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. September.

5. Tetra Tech, Inc. (Tetra Tech), 2012b. *Groundwater Monitoring Report, May–June 2010*. *Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. February.

6. Tetra Tech, Inc. (Tetra Tech), 2012c. *Groundwater Monitoring Report, March–May 2011*, *Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. December.

7. Tetra Tech, Inc. (Tetra Tech), 2012d. *Groundwater Monitoring Report, March–April 2012*, *Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. August.

8. Tetra Tech, Inc. (Tetra Tech), 2013. *Groundwater Monitoring Report, March–June 2013*, *Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. October.

9. Tetra Tech, Inc. (Tetra Tech), 2014a. *Operation and Maintenance Plan for Groundwater Remediation System, Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland.

10. Tetra Tech, Inc. (Tetra Tech), 2014b. *Groundwater Monitoring Report, May–June 2014*, *Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. November.

11. Tetra Tech, Inc. (Tetra Tech), 2015. *2015 Monitoring Well Repair Report, Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. August.

12. United States Environmental Protection Agency (USEPA), Region 3, 1993. *Region III Modifications to the Laboratory Data-Validation Functional Guidelines for Evaluating Inorganic Analyses*. April.

13. United States Environmental Protection Agency (USEPA), Region 3, 1994. *Region III Modifications to the National Functional Guidelines for Organic Data Review*. September.

14. United States Environmental Protection Agency (USEPA), 2006. *Treatment Technologies for 1,4-Dioxane: Fundamentals and Field Applications*. Office of Solid Waste and Emergency Response. EPA 542-R-06-009. December.

15. United States Environmental Protection Agency (USEPA), 2009. *Emerging Contaminant 1,4-Dioxane*. Office of Solid Waste and Emergency Response fact sheet. EPA 505-F-09-006. September.

16. United States Environmental Protection Agency (USEPA), 2014. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. Prepared by Oak Ridge National Laboratory. May. http://epa-prgs.ornl.gov/chemicals/index.shtml.

APPENDIX A—GROUNDWATER-LEVEL RECORD SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Middle River Complex
Project No.: 117IC06247
Location: MRC
Personnel: Walt Pryor
Weather Conditions: Sunny 48°
Measuring Device: photon level meter
Tidally Influenced: Yes ___ No ✓
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW 68A	3-31-15	0945			11.40			Crack Pad needs replaces
MW 67A		0948			18.65			
MW 49A		1002			10.30			
MW 50A		1005			13.80			Broken dog ears and lid
MW 109A		1015			12.90			Broken Dog ears
MW 109B		1016			15.80			Needs Replaced
MW 96A		1018			12.05			
MW 96B		1019			15.15			
MW 17A		1026			6.62			Needs Bolts
MW 64A		1029			6.25			
MW 90B		1032			6.50			
MW 18A		1039						~~Destroyed~~
MW 07A		1041						Covered with Equipment
MW 20A		1045			9.50			Broken dog ears need new bolts
MW 19A		1050			6.40			
MW 21A		1055			2.30			
MW 21B		1057			8.03			
MW 90A		1059			5.01			
MW 80B		1101			6.85			
MW 22A		1105						Covered with Equipment
MW 22B		1110						
MW 58A		1112						Covered with Equipment
MW 91A		1117			9.05			
MW 91B		1118			20.90			
MW 55A		1122			12.67			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Middle River Center
Location: MRC
Weather Conditions: Sunny
Tidally Influenced: Yes ___ No X
Project No.: 112IC06747
Personnel: Walt Payton
Measuring Device: Water Level meter
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW 57A	3-31-15	1126			4.05			
MW 56A		1129						Covered with Boxes
MW 59A		1131			6.05			
MW 42A		1135			10.19			Needs Bolts
MW 87A		1139			11.20			Broken
MW 87B		1140			11.53			Pad needs Replaced
MW 25A		1142			12.40			Broken Pad Replaced
MW 86A		1149			3.40			
MW 86B		1150			3.36			
MW 95B		1155			3.73			needs bolt
MW 93A		1158			9.80			
MW 93B		1159			10.90			
MW 88A		1202			3.46			
MW 88B		1203			3.52			
MW 115A		1206			5.75			
MW 39A		1303			0.92			
MW 105A		1305			4.40			
MW 105B		1306			4.85			
MW 38A		1310			4.35			
MW 38B		1311			4.60			
MW 112A		1317			4.02			
MW 37B		1320			5.90			
MW 37C		1321			5.37			
MW 104A		1125			5.30			
MW 104B	↓	1126			5.97			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Middle River Complex
Project No.: 112IC06247
Location: MRC
Personnel: Walt Pryor
Weather Conditions: Sunny
Measuring Device: Water Level meter
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW47A	3-31-15	1333			3.23			needs Bolts
MW46A		1337			4.67			
MW66A		1345			4.58			
MW65A		1347			3.35			
MW85A		1352			1.40			
MW53A		1405			3.70			
MW53B		1407			3.72			
MW52A		1465			5.84			
MW51A		1421			2.17			
MW08A		1425			Top of PVC			
MW08B		1427			-3.00			
MW110A		1429			2.71			
MW110B		1431			2.43			
MW04A		1504			2.47			
MW94B		1507			4.07			
MW116A		1510			4.70			
MW83A		1513			Top of PVC			
MW84A		1515			Top of PVC			
MW85A		1517			4.20			
MW101A		1527			14.57			
MW101B		1528			14.17			
MW102A		1534			9.80			
MW102B		1535			10.90			
MW79B		1537			8.95			
MW32A	↓	1541			3.32			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Middle River Complex
Project No.: 117IC06247
Location: MRC
Personnel: Walt Payson
Weather Conditions: Sunny 85°
Measuring Device: Water Level
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW 34A	3-31-15	1544			4.30			
MW 34B		1546			3.91			
MW 34C		1547			3.35			
MW 33A		1549			2.05			
MW 31A		1557			2.75			
MW 30A		1554			0.50			
MW 62A		1556			0.80			
MW 62C		1557			2.40			
MW 43A		1603			1.05			
MW 44A		1608			0.75			
MW 114A		1611			2.05			
MW 113A		1612			1.63			
MW 29A	4-1-15	1108			5.10			
MW 28A		1111			7.40			Need Bolt
MW 27A		1456			9.06			
MW 27B		1118			12.19			
MW 27C		1119			12.90			
MW 26A		1121			9.80			
MW 24A		1561			7.44			
MW 77A		1125			6.40			
MW 61A		1129			4.50			
MW 71B		1324			0.97			
MW 71A		1325			1.50			
MW 15A		1328			0.68			Crack Pad
MW 16A		1330			1.41			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Middle River Center
Project No.: 117G06247
Location: MD
Personnel: Walt Pryor
Weather Conditions: Sunny 35°
Measuring Device: Water Level Meter
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW54A	4-1-15	1333			3.53			
MW11A		1336			1.44			
MW09A		1340			0.50			
MW10A		1352			Top of PVC			
MW11C		1354			1.08			
MW01A		1404			12.18			
MW02A		1408			6.37			
MW05A		1411			12.76			
MW03A		1417			2.63			
MW37A		1436			8.34			
MW73B		1440			7.68			
MW72B		1442			7.86			

* All measurements to the nearest 0.01 foot

APPENDIX B—MONITORING WELL PURGING AND SAMPLING RECORDS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 117106247

Sample ID No.: MRLMW-01A
Sample Location: MRL
Sampled By: JPM
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 5/6/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0930								
Method: peri pump	clear	4.74	0.357	17.88	8.18	1.72	0.2	216

PURGE DATA:

Date: 5/6/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): –								
Static Water Level (WL): 12.37								
One Casing Volume(gal/L): –								
Start Purge (hrs): 0835								
End Purge (hrs): 0930								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
perchlorate	–	1-250 ml plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-01A
DATE: 5/6/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0835	12.37	—	—	—	—	—	—	—	—	
0840	12.97	200	4.54	0.542	79.0	4.39	21.06	210	0.3	
0845	13.22	200	4.75	0.398	29.0	3.08	19.53	201	0.2	
0850	13.44	200	4.78	0.372	16.3	2.74	18.84	205	0.2	
0855	13.61	200	4.77	0.361	17.4	2.52	18.41	209	0.2	
0900	13.77	200	4.76	0.358	23.3	2.31	18.28	212	0.2	
0905	13.90	200	4.75	0.357	16.3	2.19	17.98	214	0.2	
0910	14.00	200	4.77	0.355	17.2	2.25	17.86	213	0.2	
0915	14.12	200	4.74	0.354	13.5	1.97	17.79	215	0.2	
0920	14.23	200	4.74	0.356	12.70	1.93	17.70	215	0.2	
0925	14.35	200	4.75	0.357	9.59	1.76	17.83	216	0.2	
0930	14.45	200	4.74	0.357	8.18	1.72	17.88	216	0.2	
	Sample	Perchlorate @		0930						

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-02A-051115
Sample Location: MW-02A
Sampled By: MP
C.O.C. No.:

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-11-15 / Time: 1347 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	4.60	0.550	20.26	0.0	0.79	0.3	396

PURGE DATA:

Date: 5-11-15 / Method: Peristaltic pump	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 2" PVC		See Low Flow Purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 7.10								
One Casing Volume(gal/L):								
Start Purge (hrs): 1256								
End Purge (hrs): 1342								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3X2 40 ml VOA	6 ✓
Total metals	HNO3	2X1 500 ml Poly	2 ✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	MRC-Dup05-051115	Walt P

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-02A-051115
DATE: 5-11-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1256	7.10	—	—	—	—	—	—	—	—	Initial, no odor
1257	7.80	300	4.54	0.551	27.1	1.77	24.42	372	0.3	Slightly cloudy
1302	8.23	200	4.56	0.573	4.4	0.51	22.28	401	0.3	clear water
1307	8.28	100	4.54	0.568	0.0	0.89	21.62	406	0.3	
1312	8.50	100	4.58	0.561	0.0	0.84	20.56	405	0.3	
1327	8.60	100	4.59	0.553	0.0	0.82	20.02	398	0.3	
1332	8.65	100	4.59	0.552	0.0	0.81	20.24	395	0.3	
1337	8.65	100	4.60	0.551	0.0	0.80	20.37	396	0.3	
1342	8.67	100	4.60	0.550	0.0	0.79	20.21	396	0.3	
			Well parameters stabilize →							
			Sampling Begins							

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112EC06247

Sample ID No.: MRC-MW-04A-043015
Sample Location: MW-04A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-30-15 / Time: 1433 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	7.00	22.4	16.00	03.15	0.00	13.1	-20

PURGE DATA:

Date: 4-30-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 7.15								
One Casing Volume(gal/L):								
Start Purge (hrs): 1342								
End Purge (hrs): 1428								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total metals	HNO3	1 - 500 ml Poly	—

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Complex
PROJECT NUMBER: 112Ico6247
WELL ID.: MRC-MW-04A-043015
DATE: 4-30-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1342	3.65	—	—	—	—	—	—	—	—	Initial, purge
1343	3.25	300	7.24	21.8	116	0.62	19.17	-70	13.2	Cloudy water
1348	3.67	100	7.33	23.1	82.4	0.22	18.90	-84	14.0	
1353	4.20	100	7.29	24.2	51.0	0.08	16.82	-83	14.6	
1403	4.25	100	7.24	23.8	32.5	0.01	16.14	-75	14.4	
1413	4.35	100	7.10	23.3	27.2	0.00	16.22	-38	14.0	
1418	4.45	100	7.04	22.8	4.00	0.00	16.41	-28	13.7	Clean water
1423	4.47	100	7.02	22.4	3.50	0.00	15.98	-25	13.4	
1426	4.49	100	7.00	22.4	3.15	0.00	16.00	-20	13.1	
			Well parameter Stable							
			Sample Begin							

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112EC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-~~EXT~~06-043015
Sample Location: EXT-06
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-30-15 / Time: 1024	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	6.35	0.452	14.34	9.60	3.39	0.2	216

PURGE DATA:

Date: 4-30-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 4" PVC			See low flow purge Data sheet					
Total Well Depth (TD):								
Static Water Level (WL): 9.50								
One Casing Volume(gal/L):								
Start Purge (hrs): 0937								
End Purge (hrs): 1023								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1,4 Dioxane	NaHSO4	2- 500 ml Ambers	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MW-EXT06 - 043015
DATE: 4-30-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0937	9.50	—	—	—	—	—	—	—	—	Initial, no color
0938	9.55	300	5.95	0.476	0.0	6.94	15.11	249	0.2	clear water
0943	9.57	300	6.27	0.469	6.1	4.18	14.93	234	0.2	↓
0944	9.60	300	6.29	0.459	48.8	3.79	14.38	226	0.2	slightly cloudy
0954	9.65	200	6.31	0.457	26.9	3.56	14.29	222	0.2	↓
1008	9.65	200	6.34	0.455	14.2	3.46	14.21	217	0.2	↓
1013	9.65	200	6.32	0.451	9.97	3.38	14.49	217	0.2	clear water
1018	9.65	200	6.34	0.450	9.64	3.33	14.62	217	0.2	
1023	9.65	200	6.35	0.452	9.60	3.39	14.34	216	0.2	↓
			Well parameters stabilized							
				Sampling Begun						

SIGNATURE(S): Matt P

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC00247

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-07A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/12/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 0920								ORP
Method: ped pump	clear	5.50	2.14	19.29	9.02	1.75	1.1	212

PURGE DATA:

Date: 5/12/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: ped pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): –		SEE LOW FLOW PURGE DATA SHEET						
Static Water Level (WL): 12.05								
One Casing Volume(gal/L): –								
Start Purge (hrs): 0820								
End Purge (hrs): 0920								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MAC GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MACMW-07A
DATE: 5/12/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0820	12.05	–	–	–	–	–	–	–	–	
0825	12.35	200	5.08	2.12	66.9	3.76	22.19	207	1.1	
0830	12.75	200	5.28	2.11	32.4	3.32	20.73	219	1.1	
0835	12.90	200	5.32	2.11	18.5	3.49	19.58	215	1.1	
0840	13.05	200	5.30	2.12	13.8	3.18	19.11	220	1.1	
0845	13.21	200	5.33	2.13	13.1	3.06	18.71	223	1.1	
0850	13.41	200	5.35	2.14	13.4	2.92	18.62	224	1.1	
0855	13.52	200	5.37	2.14	11.75	2.77	18.64	225	1.1	
0900	13.67	200	5.38	2.15	10.59	2.63	18.58	224	1.1	
0905	13.79	200	5.41	2.14	10.47	2.52	18.75	221	1.1	
0910	13.90	200	5.42	2.14	9.31	2.15	19.06	219	1.1	
0915	14.00	200	5.45	2.14	9.65	1.84	19.12	216	1.1	
0920	14.15	200	5.50	2.14	9.02	1.75	19.29	212	1.1	
	Sample Total metals + 1-4 dioxane @ 0920									

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LM Middle River Complex
Project No.: 112IC06247

Sample ID No.: MRC-MW-8A-041615
Sample Location: MRC-MW-8A
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/16/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1220								
Method: ~~Purge~~ Low flow	brown	6.23	2.92	12.87	52.3	1.48	1.5	-42

PURGE DATA:

Date: 4/16/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1129								
End Purge (hrs): 1220								
Total Purge Time (min): 51								
Total Vol. Purged (gal/L): 3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620)	HCl	3x 40mL glass	3
1,4 dioxane (522)	$NaHSO_4$	1x 500mL amber	1
Perchlorate (ClO_4)	None	1x 250mL plastic	1
Metals (Hg) (Total)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

-Color is translucent brown

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LM Middle River Complex
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-8A-04/615
DATE: 4/16/15

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
	1129	0.10									Begin Purging
	1139	3.60	350	6.07	2.85	11.9	3.00	12.32	0	1.5	
	1148	4.06		6.02	2.84	27.4	1.64	12.46	1	1.5	
	1156	4.87	350	6.10	2.88	41.6	1.48	12.51	-14	1.5	
1	1203	5.52	300	6.22	2.42	43.7	1.46	12.53	-38	1.5	
2	1209	6.03	~~330~~ TG	6.23	2.92	49.1	1.32	12.55	-41	1.5	
3	1215	6.45	330	6.23	2.92	51.8	1.58	12.74	-42	1.5	
	1220	6.68		6.23	2.92	52.3	1.48	12.87	-42	1.5	Begin sampling
	1229										Sampling complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112ICD6247

Sample ID No.: MRL-MW-10A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/20/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0930								
Method: peri pump	Clear	6.40	0.512	16.32	19.2	0.20	0.2	-125

PURGE DATA:

Date: 4/20/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): -		See low flow purge data sheet						
Static Water Level (WL): 0.2								
One Casing Volume(gal/L):								
Start Purge (hrs): 0845								
End Purge (hrs): 0930								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	Refrig	1-500 mL amber	-
Total Metals	HNO3	1-500 mL plastic	-

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015 WELL ID.: MRL-MW-10A-042015

PROJECT NUMBER: 112EC06247 DATE: 4/20/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0845	~~0.1~~	–	–	–	–	–	–	–	–	
0850	1.02	300	6.25	0.547	19.3	0.51	12.30	-113	0.3	
0855	1.67	300	6.33	0.517	17.9	0.34	11.83	-120	0.2	
0900	2.25	300	6.36	0.513	17.1	0.26	11.80	-122	0.2	
0905	2.06	300	6.38	0.510	14.7	0.10	11.60	-123	0.2	
0910	1.98	300	6.38	0.508	14.2	0.03	11.63	-124	0.2	
0915	1.91	300	6.39	0.508	14.3	0.00	11.64	-125	0.2	
0920	1.94	300	6.40	0.510	19.2	0.00	11.43	-125	0.2	
0925	1.96	300	6.40	0.512	17.3	0.00	11.30	-125	0.2	
0930	1.96	300	6.40	0.512	19.2	2.00	11.32	-125	0.2	
	Sample	VOCs, Total Metals, 1-4 dark @ 0930								

SIGNATURE(S): _____

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-1A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/17/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0930	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: peri pump	Hazy	6.27	1.16	11.57	33.0	1.70	86	20

PURGE DATA:

Date: 4/17/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC				See low flow purge data sheet				
Total Well Depth (TD): —								
Static Water Level (WL): 0.8'								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0800								
End Purge (hrs): 0930								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): ~6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

* 90 min purge time limit reached

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MAC GW 2015 WELL ID.: MAC-MW-11A-041715

PROJECT NUMBER: 112IC06247 DATE: 4/17/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0800	0.8	—	—	—	—	—	—	—	—	
0805	1.23	300	6.41	1.46	38.6	0.36	12.14	206	0.7	
0810	1.30	300	6.44	1.47	40.6	0.17	11.50	182	0.7	
0815	1.40	300	6.44	1.44	33.2	0.32	11.21	79	0.7	
0820	1.41	300	6.47	1.32	38.7	2.23	11.20	30	0.6	
0825	1.41	300	6.43	1.28	37.4	2.25	11.38	31	0.6	
0830	1.41	300	6.39	1.24	33.5	2.32	11.38	30	0.6	
0835	1.41	300	6.35	1.18	28.3	2.32	11.47	27	0.6	
0840	1.41	300	6.34	1.17	27.1	2.26	11.46	24	0.6	
0845	1.41	300	6.31	1.17	25.1	2.18	11.39	24	0.6	
0850	1.41	300	6.32	1.16	24.8	2.24	11.44	23	0.6	
0855	1.41	300	6.32	1.16	25.3	2.18	11.44	23	0.6	
0900	1.41	300	6.29	1.17	25.5	1.99	11.33	23	0.6	
0905	1.41	300	6.29	1.16	24.9	1.16	11.35	21	0.6	
0910	1.41	300	6.28	1.16	27.1	1.76	11.40	20	0.6	
0915	1.41	300	6.27	1.16	30.8	1.70	11.51	19	0.6	
0920	1.41	300	6.27	1.16	32.9	1.83	11.55	19	0.6	
0925	1.41	300	6.28	1.16	33.1	1.67	11.55	19	0.6	
0930	1.41	300	6.27	1.16	33.0	1.70	11.57	20	0.6	
	Sample VOCs, 1-4 dioxane, Total Metals @ 0930									
						*90 min purge time limit reached				

SIGNATURE(S): _____

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-11C-062515
Sample Location: MRC-MW-11C
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/25/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1505								
Method: Low flow	clear	4.67	0.079	20.77	4.1	3.57	0.0	202

PURGE DATA:

Date: 6/25/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri-Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):			See Purge Data Sheet					
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1410								
End Purge (hrs): 1505								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40mL VOAs	3
Total Metals	HNO_3	2x250mL ambers	2

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-11C-062515
DATE: 6/25/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1410	0.99									Begin Purging
1420	0.99	200	5.22	0.038	6.8	3.64	21.33	108	0.0	
1430	0.99		4.93	0.035	3.3	3.50	21.19	148	0.0	
1440	1.00	200	4.74	0.032	3.8	3.58	21.13	169	0.0	
1449	0.99		4.69	0.030	3.9	3.55	21.14	182	0.0	
1455	1.00	220	4.67	0.029	4.0	3.45	21.13	189	0.0	
1500	1.01		4.67	0.028	4.2	3.45	21.10	196	0.0	
1505	1.01		4.67	0.028	4.1	3.57	20.74	202	0.0	Begin Sampling
1514										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC
Project No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW12A-062415
Sample Location: MW12A
Sampled By: SBC
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-24-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1135								
Method: Peri Pump	Clear	5.61	0.483	21.62	1.6	0.00	0.2	-17

PURGE DATA:

Date: 6-24-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump			See Low Flow					
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 13.98			Purge Data Sheet					
Static Water Level (WL): 0.30								
One Casing Volume(gal/L):								
Start Purge (hrs): 1055								
End Purge (hrs): 1200								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 3.9 gl								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	- 3-40 mL vials	✓
1,4-Dioxane	-	2-250 mL Ambers	✓
Total Metals	HNO_3	1-500 mL plastic	✓
Nat Attn: TOC	H_2SO_4	1-250 mL amber	✓
MEE	HCl	3-40 mL vials	✓
Alkalinity	-	1-250 mL plastic	✓
NH_3	H_2SO_4	1-250 mL plastic	✓
Cl, NO_2, NO_3, OPO_4, SO_4, TDS, Si	—	1-250 mL plastic	✓

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:

WELL ID.: MRC-MW12A-062415
DATE: 062415

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1055	0.30	—	—	—	—	—	—	—	—	
1100	0.96	200	5.19	0.488	87.0	0.46	24.51	26	0.2	
1105	1.66	200	5.30	0.497	49.0	0.17	22.87	8	0.2	
1110	2.38	200	5.58	0.495	36.6	0.08	22.53	-3	0.2	
1115	2.97	200	5.62	0.493	16.3	0.05	22.17	-14	0.2	
1120	3.42	200	5.63	0.491	8.7	0.02	22.04	-16	0.2	
1125	4.00	200	5.67	0.488	2.4	0.00	21.81	-19	0.2	
1130	4.23	200	5.63	0.484	1.8	0.00	21.73	-17	0.2	
1135	4.45	200	5.61	0.483	1.6	0.00	21.62	-17	0.2	
Sampling										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC
Project No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW12B-062415
Sample Location: MW12B
Sampled By: SBC
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-24-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1345								
Method: Peri Pump	Clear	5.81	0.299	24.35	1.3	0.00	0.1	-42

PURGE DATA:

Date: 6-24-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump			See Low Flow					
Monitor Reading (ppm): ~								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 29.35			Purge Data					
Static Water Level (WL): 1.17								
One Casing Volume(gal/L):								
Start Purge (hrs): 1305								
End Purge (hrs): 1410								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 35-1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1,4-Dioxane	–	2-250 mL Ambers	✓
Total Metals	HNO_3	1-500 mL plastic	✓
Nat Atten TOC	H_2SO_4	1-250 mL Amber	✓
MEE	HCl	3-40 mL vials	✓
Alkalinity	–	1-250 mL plastic	✓
NH_3	H_2SO_4	1-250 mL plastic	✓
Cl, NO_2, NO_3, OPO_4, SO_4, TDS, Si	–	1-250 mL plastic	✓

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC **WELL ID.:** MRC-MW12B-062415
PROJECT NUMBER: **DATE:** 6-24-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1305	1,17	-	-	-	-	-	-	-	-	
1310	3,36	300	5,43	0,275	48,2	0,12	22,77	4	0,1	
1315	4,73	250	5,75	0,293	8,0	0,01	22,47	-29	0,1	
1320	5,89	200	5,77	0,296	6,2	0,00	22,86	-31	0,1	
1325	6,82	200	5,78	0,297	5,9	0,00	23,14	-38	0,1	
1330	7,42	200	5,79	0,299	1,3	0,00	23,22	-40	0,1	
1335	8,46	200	5,79	0,300	1,2	0,00	23,46	-42	0,1	
1340	9,38	200	5,79	0,300	1,1	0,00	24,11	-44	0,1	
1345	10,24	200	5,81	0,299	1,3	0,00	24,35	-42	0,1	
Sampling										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: MRC
Project No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW12C-062515
Sample Location: MW12C
Sampled By: SBL
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 6-25-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1110								
Method: Peri Pump	Clear	4.38	0.024	18.40	>1	4.39	0.0	371

PURGE DATA

Date: 6-25-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump			See Low Flow Purge Data Sheet					
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 75.25								
Static Water Level (WL): 0								
One Casing Volume(gal/L):								
Start Purge (hrs): 0930								
End Purge (hrs): 1110								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 8 gal								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 ml VIALS	✓
1,4-Dioxane	-	2-250 ml Amber	✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:

WELL ID.: MRC-MW12C-062515
DATE: 6-25-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0930	0	—	—	—	—	—	—	—	—	
0935	0	300	3.79	0.028	143	6.57	17.87	321	0.0	
0940	0	300	4.12	0.027	355	5.79	17.45	303	0.0	
0945	0	300	4.13	0.026	418	5.61	17.09	307	0.0	
0950	0	300	4.11	0.026	384	5.59	16.89	313	0.0	
0955	0	300	4.08	0.026	213	5.56	16.74	319	0.0	
1000	0	300	4.06	0.026	138	5.51	16.56	326	0.0	
1005	0	300	4.07	0.026	104	5.23	16.61	328	0.0	
1010	0	300	4.08	0.026	93.4	5.10	16.65	329	0.0	
1015	0	300	4.09	0.026	54.8	5.13	16.54	327	0.0	
1020	0	300	4.11	0.025	43.4	5.14	16.42	326	0.0	
1025	0	300	4.16	0.025	32.8	4.91	16.88	321	0.0	
1030	0	300	4.19	0.025	28.8	4.67	17.06	315	0.0	
1035	0	300	4.14	0.024	28.1	4.45	17.54	319	0.0	
1040	0	300	4.23	0.024	25.4	4.41	17.63	316	0.0	
1041	0	300	4.86	0.024	21.2	4.36	17.89	309	0.0	
1050	0	300	4.42	0.024	19.3	4.33	18.28	306	0.0	
1055	0	300	4.39	0.024	17.6	4.38	18.31	307	0.0	
1100	0	300	4.38	0.024	10.4	4.39	18.36	309	0.0	
1105	0	300	4.38	0.024	9.8	4.37	18.39	310	0.0	
1110	0	300	4.38	0.024	7.1	4.39	18.40	311	0.0	
S-plug										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: MRL
Project No.:

Sample ID No.: MRL-MW3A-062515
Sample Location: MW3A
Sampled By: SRC
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 6-25-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1220								
Method: Peri Pump	Clear	7.22	0.672	18.52	1.6	0.00	0.3	~180

PURGE DATA

Date: 6-25-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump		NA	See Low Flow					
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			Purge Data Sheet					
Total Well Depth (TD): 14.00								
Static Water Level (WL): 1.50								
One Casing Volume(gal/L):								
Start Purge (hrs): 1130								
End Purge (hrs): 1230								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 2gal								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1,4-Dioxane	—	2-250 mL Amber	✓

OBSERVATIONS / NOTES

QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:

WELL ID.: MRC-MW13A-062515
DATE: 6-25-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1130	1.50	–	–	–	–	–	–	–	–	
1135	1,74	200	6.83	0,648	95,6	0,10	22.60	-136	0,3	
1140	1,90	200	6,75	0,635	67.1	0,04	21,25	-149	0,3	
1145	1,93	200	6.78	0.631	23,4	0,03	21,31	-152	0,3	
1150	1,95	200	6,80	0,627	17,5	0,03	21,15	-157	0,3	
1155	2,14	200	6.98	0.619	10.4	0.03	20.32	-166	0.3	
1200	2,38	200	7,14	0,613	15,5	0,00	19,04	-178	0,3	
1205	2,44	200	7,18	0,624	11,4	0,00	18,60	-178	0,3	
1210	2,53	200	7,20	0,653	7,9	0.00	18,58	-179	0,3	
1215	2,64	200	7,21	0,668	7,8	0,00	18,54	-180	0,3	
1220	2,81	200	7,22	0,672	6,6	0.00	18,52	-180	0,3	
Sampling										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112FC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-14A-062415
Sample Location: MRC-MW-14A
Sampled By: JG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/24/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1515								
Method: Low Flow	Clear. brown	6.37	1.94	24.27	29.0	1.29	1.0	-69

PURGE DATA:

Date: 6/24/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:			See	Purge	Data	Sheet		
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1420								
End Purge (hrs): 1515								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 2.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40 mL VOAs	3
Total Metals	HNO_3	1x500 mL Poly	1
1,4 dioxane	None	2x250mL ambers	2

OBSERVATIONS / NOTES:

Note If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC 06247
WELL ID.: MRC-MW-14A-062415
DATE: 6/24/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1420	2.35									Begin Purging
1430	2.99	190	6.20	1.62	45.7	1.47	28.79	-37	0.9	
1440	3.28		6.23	1.74	50.7	1.31	28.04	-47	0.9	
1450	3.51	~~220~~ 180	6.26	1.80	34.3	1.24	27.77	-53	0.9	
1459	3.71		6.28	1.84	33.2	1.29	27.55	-56	0.9	
1505	3.85	180	6.31	1.89	30.0	1.40	27.37	-61	1.0	
1510	3.91		6.34	1.91	29.6	1.30	27.33	-64	1.0	
1515	3.96		6.37	1.94	29.0	1.28	27.27	-69	1.0	Begin Sampling
1524										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC
Project No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC MW14B-062415
Sample Location: MW14B
Sampled By: S. Cameron
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-24-15 / Time: 1000 / Method: Peri Pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	6.43	1.58	17.80	1.8	0.01	0.8	-132

PURGE DATA:

Date: 6-24-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump		See Low Flow Purge Data Sheet						
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 29.70								
Static Water Level (WL): 3.88								
One Casing Volume(gal/L):								
Start Purge (hrs): 0910								
End Purge (hrs): 1025								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 2.91								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1,4-Dioxane	—	2-250 mL amber	✓
Total Metals	HNO_3	1-500 mL plastic	✓
MAT Attn: TOC	H_2SO_4	1-250 mL amber	✓
MEE	HCl	3-40 mL vials	✓
Alkalinity	—	1-250 mL plastic	✓
NH_3	H_2SO_4	1-250 mL plastic	✓
$Cl, NO_2, NO_3, OPO_4, SO_4$, TDS, Si	—	1-250 mL plastic	✓

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:
WELL ID.: MRC-MW14B-062415
DATE: 6-24-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0910	3.38	—	—	—	—	—	—	—	—	
0915	4.27	300	5.95	1.52	47.6	1.65	23.48	-102	0.8	
0920	4.24	200	6.11	1.53	41.2	1.11	21.41	-118	0.8	
0925	4.24	200	6.23	1.58	34.4	0.37	20.14	-123	0.8	
0930	4.28	200	6.31	1.59	28.2	0.32	19.4	-128	0.8	
0935	4.31	200	6.38	1.60	20.2	0.21	18.62	-132	0.8	
0940	4.32	200	6.40	1.60	17.4	0.19	18.48	-133	0.8	
0945	4.33	200	6.42	1.60	12.4	0.17	18.32	-134	0.8	
0950	4.34	200	6.42	1.56	13.6	0.06	18.38	-133	0.8	
0955	4.35	200	6.43	1.57	6.4	0.04	17.94	-132	0.8	
1000	4.37	200	6.43	1.58	1.8	0.01	17.80	-132	0.8	
Sampling										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-14C-062515
Sample Location: MRC-MW-14C
Sampled By: IG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/25/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0939								
Method: Low Flow	trans orng	6.03	0.122	22.64	49.1	0.91	0.1	-36

PURGE DATA:

Date: 6/25/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):			See	Purge	Data	Sheet		
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): ~~1039~~ 0839								
End Purge (hrs): 0939								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 2 gal								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x 40mL VOAs	3
Total Metals	HNO_3	1x 500mL poly	1
1,4 dioxane	None	2x 250mL ambers	2

OBSERVATIONS / NOTES:

Units If Applicable: MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-14C-062515
DATE: 6/25/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
~~0839~~	5.59									Begin Purging
0844	6.37	160	6.01	0.153	54.7	1.93	21.69	17	0.1	
0849	6.59		6.07	0.135	—	1.71	21.27	-13	0.1	
0904	6.68	~~180~~ 150	6.05	0.130	73.4	1.55	21.52	-23	0.1	
0918	6.68		6.04	0.126	54.0	1.44	22.03	-29	0.1	
0926	6.79	180	6.03	0.124	58.9	0.95	22.03	-33	0.1	
0933	6.80		6.02	0.123	54.7	0.92	21.99	-35	0.1	
0939	~~6.87~~ 6.87		6.03	0.122	49.1	0.91	22.64	-36	0.1	Begin Sampling
~~0954~~ 0954										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 117IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRL-MW-15A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4/15/15								
Time: 1925								ORP
Method: per pump	clear	6.16	2.39	14.02	9.61	0.00	~~1.2~~	-10

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/15/15								
Method: per pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): —		SEE LOW FLOW PURGE SHEET						
Static Water Level (WL): 0.30'								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1330								
End Purge (hrs): 1425								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~~4~~ 4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015
PROJECT NUMBER: 117JC06247

WELL ID.: MRL-MW-15A
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1330	0.20	–	–	–	–	–	–	–	–	
1335	0.60	300	6.27	2.42	7.11	0.42	15.74	29	1.2	
1340	0.69	300	6.30	2.39	8.53	0.09	16.00	28	1.2	
1345	0.80	300	6.31	2.40	4.11	0.00	15.31	-33	1.2	
1350	0.88	300	6.31	2.43	2.77	0.00	14.56	-34	1.2	
1355	0.98	300	6.28	2.44	2.2.9	0.00	14.26	-30	1.2	
1400	1.01	300	6.23	2.42	1.76	0.00	14.17	-23	1.2	
1405	1.03	300	6.22	2.41	1.47	0.00	14.20	-19	1.2	
1410	1.03	300	6.20	2.38	11.57	0.00	14.55	-16	1.2	
1415	1.03	300	6.19	2.40	10.46	0.00	14.03	-12	1.2	
1420	1.03	300	6.18	2.39	10.20	0.00	14.02	-10	1.2	
1425	1.03	300	6.18	2.39	9.61	0.00	14.02	-10	1.2	
			Sample Total Metals + 1-4 dioxane @ 1425							

SIGNATURE(S): _____

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Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112G06247

Sample ID No.: MRL-MW-16A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4/15/15								
Time: 1245								
Method: peri pump	Clear	4.42	1.16	14.41	3.20	0.06	0.6	266

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/15/15								
Method: peri								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC	SEE LOW FLOW PURGE DATA SHEET							
Total Well Depth (TD): —								
Static Water Level (WL): 13.51'								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1200								
End Purge (hrs): 1245								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL glass vials	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Total Metals	HNO3	1-500 mL poly	—

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015 | WELL ID.: MRC-MW-16A
PROJECT NUMBER: 117-L06247 | DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1200	1.35	–	–	–	–	–	–	–	–	
1205	3.00	300	4.51	1.09	21.6	0.49	17.20	233	0.5	
1210	3.23	300	4.53	1.11	13.4	0.27	16.97	236	0.5	
1215	3.48	300	4.51	1.13	11.28	0.12	15.93	242	0.6	
1220	3.81	300	4.50	1.15	7.25	0.05	15.18	245	0.6	
1225	4.21	300	4.48	1.16	5.86	0.01	14.92	248	0.6	
1230	4.60	300	4.45	1.16	4.70	0.06	14.68	255	0.6	
1235	5.06	300	4.41	1.17	3.59	0.17	14.43	267	0.6	
1240	5.13	300	4.42	1.17	3.40	0.17	14.40	265	0.6	
1245	5.20	300	4.42	1.16	3.20	0.06	14.41	266	0.6	
		Sample	VOCs, 1-4 dioxane, Total Metals @ 1245							

SIGNATURE(S): _____

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Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117C0624-7

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-17A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/5/15	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Time: 1420								
Method: perf pump	clear	5.73	245	25.85	7.18	0.56	1.3	-40

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/5/15								
Method: perf pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): —		SEE LOW FLOW PURGE DATA SHEET						
Static Water Level (WL): 7.06								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1320								
End Purge (hrs): 1420								
Total Purge Time (min): 60m								
Total Vol. Purged (gal/L): ~3 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 ml vials	✓
1-4 dioxane	NaHSO4	1-250 ml amber	✓
Perchlorate	—	1-250 ml plastic	✓
Total metals	HNO3	1-500 ml plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC-GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-17A-050515
DATE: 5/5/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1320	7.06	-	-	-	-	-	-	-	-	
1325	7.49	200	5.82	2.39	346	2.01	27.96	11	1.2	
1330	7.60	200	5.68	2.23	296	1.54	26.83	13	1.1	
1335	7.66	200	5.65	2.23	39.9	1.00	25.85	10	1.1	
1340	7.71	200	5.63	2.24	33.0	1.58	25.34	7	1.1	
1345	7.78	200	5.63	2.23	30.2	1.32	25.40	3	1.1	
1350	7.82	200	5.65	2.24	20.9	1.25	25.30	-2	1.1	
1355	7.86	200	5.64	2.27	18.2	1.08	25.27	-8	1.2	
1400	7.89	200	5.67	2.31	12.9	0.98	25.33	-15	1.2	
1405	7.89	200	5.67	2.36	10.48	0.93	25.42	-22	1.2	
1410	7.89	200	5.70	2.43	9.29	0.89	25.59	-30	1.3	
1415	7.85	200	5.72	2.43	8.69	0.75	25.34	-37	1.3	
1420	7.89	200	5.73	2.45	7.18	0.56	25.45	-40	1.3	
	Sample VOCs, 1-4 dioxane, Total Metals, Perchlorate @ 1420									

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC0624

Sample ID No.: MRC-MW-19A-050615
Sample Location: MW-19A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-6-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1045								
Method: Peristaltic pump	Clear	4.11	0.870	16.55	2.3	3.52	0.4	ORP 439

PURGE DATA:

Date: 5-6-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow purge Data sheet					
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0954								
End Purge (hrs): 1040								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	NaHSO4	2 - 250 ml Amber	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pz

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112I-006247
WELL ID.: MRC-MW-19A-050615
DATE: 5-6-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0954	6.60	—	—	—	—	—	—	—	—	Initial, no odor
0955	7.75	300	4.21	0.899	19.3	3.95	15.91	384	0.4	Slightly cloudy
1000	8.05	200	4.17	0.879	12.8	3.18	16.02	411	0.4	"
1005	8.50	150	4.09	0.881	9.5	3.13	15.73	422	0.4	Clear water
1015	9.00	100	4.09	0.877	3.2	3.02	15.57	427	0.4	↓
1025	9.35	100	4.09	0.873	2.0	3.10	16.12	433	0.4	
1030	9.50	100	4.10	0.869	2.8	3.02	16.54	434	0.4	
1035	9.55	100	4.10	0.869	2.5	3.04	16.56	437	0.4	
1040	9.58	100	4.11	0.870	2.3	3.02	16.55	439	0.4	↓
				Well parameters Stabilized						
				Sampling Begin						

SIGNATURE(S): Walt R

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117IC06247

Sample ID No.: MRC-MW-21A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/14/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1210								ORP
Method: low flow	clear	6.75	0.570	15.24	21.2	0.87	.03	-75

PURGE DATA:

Date: 5/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): ~15'								
Static Water Level (WL): 9.76								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1055								
End Purge (hrs): 1210								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 x 40 mL vials	✓
Total Metals	HNO3	1-500 mL poly	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓

OBSERVATIONS / NOTES:

Circle If Applicable: MS/MSD	Duplicate ID No.: [illegible]	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112BC06247

WELL ID.: MRC-MW-21A
DATE: 5/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1055	4.26	—	—	—	—	—	—	—	—	
1100	5.11	150	6.76	0.601	OVR	2.57	17.22	-84	0.3	
1105	5.68	150	6.67	0.586	OVR	1.77	16.50	-88	0.3	
1110	6.00	150	6.72	0.581	535	1.58	16.43	-88	0.3	
1115	6.15	150	6.68	0.579	81.5	1.48	16.32	-84	0.3	
1120	6.45	150	6.70	0.575	53.2	1.41	16.27	-84	0.3	
1125	6.81	150	6.71	0.573	50.4	1.35	16.26	-85	0.3	
1130	7.14	150	6.74	0.572	45.9	1.42	16.18	-85	0.3	
1135	7.41	150	6.71	0.570	41.4	1.32	16.16	-85	0.3	
1140	7.80	150	6.73	0.568	42.7	1.27	16.26	-86	0.3	
1145	8.20	150	6.76	0.566	70.8	1.27	16.21	-85	0.3	
1150	8.70	150	6.76	0.551	21.3	1.32	16.22	-82	0.3	
1155	9.10	150	6.75	0.553	24.0	1.22	16.19	-79	0.3	
1200	9.58	150	6.74	0.566	31.4	0.90	15.45	-75	0.3	
1205	9.68	150	6.75	0.571	24.3	0.88	15.30	-75	0.3	
1210	9.78	150	6.75	0.570	21.2	0.87	15.28	-75	0.3	
	Sample	VOCs, 1-4	dioxs, Total	metals @	1210					

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117IC06247

Sample ID No.: MRC-MW-21B
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/14/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1405								
Method: low flow	clear	5.94	0.233	17.35	11.09	0.98	0.1	-7

PURGE DATA:

Date: 5/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): -								
Static Water Level (WL): 9.75								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1305								
End Purge (hrs): 1405								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~ 3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	$NaHSO_4$	1-500 mL amber	✓
Total Metals	HNO_3	1-500 mL plastic	✓
Alkalinity	-	1-250 mL poly	✓
NH_3	H_2SO_4	1-250 mL poly	✓
ODC	-	1-250 mL amber	✓
MEE	HCl	3-40 mL vials	✓
$Cl, NO_3, Na, ORP, SO_4, TDS$	-	1-250 mL poly	✓

OBSERVATIONS / NOTES:

QC: If Applicable:

MS/MSD	Duplicate ID No.: MRC-MW-DUP7-051415

Signature(s):

* for Total Metals only

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC bw 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-21B
DATE: 05/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1305	9.25	–	–	–	–	–	–	–	–	
1310	9.85	200	5.64	0.212	349	2.35	18.00	33	0.1	
1315	10.25	200	5.41	0.205	68.3	1.83	17.32	38	0.1	
1320	10.48	200	5.36	0.203	46.6	1.37	17.06	38	0.1	
1325	10.63	200	5.38	0.203	39.9	1.24	17.11	33	0.1	
1330	10.65	200	5.39	0.205	32.0	1.17	17.14	32	0.1	
1335	10.70	200	5.51	0.209	28.9	1.37	17.23	26	0.1	
1340	10.77	200	5.42	0.214	21.4	1.10	17.26	23	0.1	
1345	10.82	200	5.45	0.220	17.0	1.07	17.21	18	0.1	
1350	10.88	200	5.49	0.225	15.8	1.04	17.19	14	0.1	
1355	10.91	200	5.51	0.229	14.0	1.02	17.22	12	0.1	
1400	10.96	200	5.53	0.232	12.3	0.99	17.33	8	0.1	
1405	11.00	200	5.54	0.233	11.09	0.98	17.35	7	0.1	
	Sample VOCs, 1-4 dioxane Total metals, MEE+NAR P1405									
			~~MRC~~ MRC-MW-DUP07-051415							
						for Total Metals				

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page of

Project Site Name: Middle River Center
Project No.: 112S06247

Sample ID No.: MRC-MW-22A-050615
Sample Location: MW-22A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-6-15 / Time: 1520 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	5.88	0.116	20.66	2.1	1.35	0.1	154

PURGE DATA:

Date: 5-6-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):		See Flow Through Purge Data Sheet						
Static Water Level (WL): 12.20								
One Casing Volume(gal/L):								
Start Purge (hrs): 1344								
End Purge (hrs): 1515								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	NaHSO4	2 - 500 ml Amber	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Maddie River Center
PROJECT NUMBER: (12IC0624)
WELL ID.: MRC-MW-22A-050615
DATE: 5-6-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1344	12.20	—	—	—	—	—	—	—	—	Initial, no color
1345	13.40	300	5.77	0.122	439	2.59	20.04	162	0.1	Cloudy water
1350	13.90	200	5.73	0.121	155	1.40	19.70	180	0.1	↓
1355	14.20	150	5.73	0.121	86.7	1.76	19.69	194	0.1	↓
1405	15.50	100	5.74	0.120	6.7	1.73	19.37	207	0.1	Clear water
1415	16.45	100	5.81	0.118	6.6	1.65	19.37	212	0.1	↓
1425	17.50	100	5.85	0.117	4.2	1.56	19.75	205	0.1	↓
1435	19.40	100	5.87	0.116	3.6	1.50	20.00	189	0.1	↓
1445	19.25	100	5.89	0.116	2.2	1.46	20.45	170	0.1	↓
1455	20.10	100	5.89	0.116	2.2	1.43	20.66	160	0.1	↓
1505	21.15	100	5.89	0.115	1.9	1.39	20.89	156	0.1	↓
1515	21.80	100	5.89	0.116	2.1	1.39	20.66	154	0.1	↓
		Well parameters did not stabilize								
		often 90 min max purge purge								
		work plan Sampling Begins								

SIGNATURE(S): Walter Rz

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112EC06247

Sample ID No.: MRC-MW-22B-050615
Sample Location: MW-22B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-6-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1252								
Method: Peristaltic pump	Clear	5.19	0.154	18.90	0.0	0.28	0.1	261

PURGE DATA:

Date: 5-6-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 6.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):			See low flow purge data sheet					
Static Water Level (WL): 10.95								
One Casing Volume(gal/L):								
Start Purge (hrs): 1116								
End Purge (hrs): 1247								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	NaHSO4	2 - 500 ml Ambers	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
WP

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-22B-050615
DATE: 5-6-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1116	10.95	—	—	—	—	—	—	—	—	Initial pump on
1117	11.95	300	5.33	0.214	8.8	1.07	18.08	280	0.1	Clean Water
1122	12.35	200	5.31	0.199	8.0	0.82	18.02	273	0.1	
1127	13.10	100	5.22	0.184	5.0	0.63	18.11	268	0.1	
1137	14.60	100	5.17	0.171	2.9	0.45	18.28	266	0.1	
1147	15.90	100	5.17	0.163	0.1	0.38	18.74	267	0.1	
1157	17.65	100	5.17	0.156	0.0	0.35	19.30	266	0.1	
1207	18.85	100	5.18	0.154	0.0	0.35	19.60	266	0.1	
1217	20.00	100	5.18	0.154	0.0	0.30	19.54	265	0.1	
1227	20.98	100	5.18	0.154	0.0	0.30	19.76	264	0.1	
1237	21.35	100	5.19	0.154	0.0	0.29	19.93	263	0.1	
1247	21.85	100	5.19	0.154	0.0	0.28	19.90	261	0.1	
			Well parameters did not stabilize							
			after 90 min of max purge rate							
			Work plan Sampling Begin							

SIGNATURE(S): Matt Pz

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-24A-051315
Sample Location: MRC-MW-24A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1210								
Method: Low Flow	clear	4.20	1.44	15.69	3.0	0.00	0.7	270

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1123								
End Purge (hrs): 1210								
Total Purge Time (min): 47								
Total Vol. Purged (gal/L): 3gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (Hg)	Nitric Acid	1x500mL plastic	1
NH_3	H_2SO_4	1x250mL plastic	1
Alkalinity	None	1x250mL plastic	1
Cl, NO_2, NO_3, SO_4, PO_4, TDS, Si	None	1x250mL plastic	1
Dissolved TOCs	None	1x250mL amber	1
RSK-175	HCl	3x40mL glass	3

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-24A-051315
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1123	7.65									Begin Purging
1133	8.63	280	4.26	1.40	4.5	0.13	16.01	269	0.7	
1142	8.74		4.22	1.42	4.2	0.00	15.90	282	0.7	
1150	8.77	300	4.21	1.43	3.1	0.00	15.80	280	0.7	
1157	8.78		4.21	1.43	3.4	0.01	15.90	280	0.7	
1204	8.79	300	4.21	1.44	3.1	0.00	15.76	273	0.7	
1210	8.79		4.20	1.44	3.0	0.00	15.69	270	0.7	Begin Sampling
1217										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRL-MW-25A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1005								
Method: low flow	Clear	5.50	1.20	17.97	27.8	1.13	0.6	31

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): ~30'								
Static Water Level (WL): 12.89								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0835								
End Purge (hrs): 1005								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): ~3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	$NaHSO_4$	1-500 mL amber	✓
Total Metals	HNO_3	1-500 mL poly	✓
MEE (RSK-175)	HCl	3-40 mL vials	✓
NH_3	H_2SO_4	1-250 mL poly	✓
Alkalinity	—	1-250 mL poly	✓
DOC	—	1-250 mL amber	✓
Cl, ORP, NO_2, NO_3, SO_4, TDS, Fe	~~HNO3~~	1-250 mL poly	✓

OBSERVATIONS / NOTES:

NAA parameters

* 90 min purge time limit reached

Circle if Applicable:
MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-25A
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0835	12.89	—	—	—	—	—	—	—	—	
0840	13.40	200	4.50	1.23	292	3.18	20.63	185	0.6	
0845	13.95	200	5.48	1.18	242	2.39	19.31	126	0.6	
0850	14.21	200	5.48	1.15	77.8	2.11	18.69	108	0.6	
0855	14.61	200	5.49	1.15	68.7	1.83	17.81	114	0.6	
0900	14.89	200	5.49	1.16	61.9	1.82	17.44	85	0.6	
0905	15.25	200	5.59	1.16	62.6	1.77	17.31	73	0.6	
0910	15.42	200	5.49	1.16	52.8	1.52	17.40	66	0.6	
0915	15.61	200	5.48	1.16	55.2	1.46	17.63	59	0.6	
0920	15.80	200	5.48	1.16	43.2	1.38	17.81	54	0.6	
0925	15.93	200	5.50	~~1.16~~ 1.17	42.2	1.34	17.71	50	0.6	
0930	16.05	200	5.50	1.17	44.1	1.31	17.62	45	0.6	
0935	16.18	200	5.49	1.18	35.3	1.24	17.75	42	0.6	
0940	16.26	200	5.58	1.18	36.4	1.53	17.72	39	0.6	
0945	16.32	200	5.52	1.18	31.7	1.26	17.51	37	0.6	
0950	16.39	200	5.51	1.19	31.8	1.21	17.63	35	0.6	
0955	16.41	200	5.50	1.19	28.8	1.16	17.74	33	0.6	
1000	16.43	200	5.52	1.20	26.5	1.15	17.59	31	0.6	
1005	16.45	200	5.50	1.20	27.8	1.13	17.47	31	0.6	
	Sample	VOCs, 1-4 dioxane, Total metals, MEE+NAA @ 1005								
		90 min purge time limit reached								

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-26A-042315
Sample Location: MW-26A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4-23-15								
Time: 1203								orp
Method: Peristaltic pump	Clear	4.76	0.506	14.30	0.0	0.22	0.2	188

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-23-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See	low	flow	purge		
Total Well Depth (TD):								
Static Water Level (WL): 9.70				Data	Sheet			
One Casing Volume(gal/L):								
Start Purge (hrs): 1101								
End Purge (hrs): 1158								
Total Purge Time (min): 57								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total metals	HNO_3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-26A-042315
DATE: 4-23-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1101	9.70	—	—	—	—	—	—	—	—	Initial pre odor
1103	10.05	300	3.97	0.568	13.6	3.22	16.11	291	0.3	Clear Water
1108	10.05	300	3.99	0.554	7.7	1.26	15.49	330	0.3	
1113	10.15	300	4.24	0.535	1.3	0.83	14.98	310	0.3	
1123	10.15	300	4.47	0.517	0.6	0.46	15.06	263	0.2	
1133	10.20	300	4.67	0.508	0.0	0.37	14.76	234	0.2	
1143	10.20	300	4.70	0.510	0.0	0.35	14.49	206	0.2	
1148	10.20	300	4.72	0.509	0.0	0.27	14.37	198	0.2	
1253	10.20	300	4.74	0.507	0.0	0.26	14.31	191	0.2	
1258	10.20	300	4.76	0.506	0.0	0.22	14.30	188	0.2	
			Well parameter Stabilized							
			Sampling Begins							

SIGNATURE(S): Walt Pr

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-27A-042115
Sample Location: MRC-MW-27A
Sampled By: TC
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4/21/15								
Time: 1125								
Method: Low flow	trans. brown	5.92	3.32	14.86	0.0	1.02	1.2	-45

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/21/15								
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1041								
End Purge (hrs): 1125								
Total Purge Time (min): 44								
Total Vol. Purged (gal/L): 3 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x 40mL glass	3
Total Metals	Nitric Acid	1x 500mL Plastic	1
Alkalinity	None	1x 250mL plastic	1
NH_3	H_2SO_4	1X 250mL Plastic	1
RSK-175	HCl	3x 40mL glass	3
Cl, NO_2, NO_3, SO_4...	None	1x 250mL plastic	1
TOC	H_2SO_4	1x 250mL amber	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-27A-042115
DATE: 4/21/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
~~1014~~										~~Beg. in purge~~
1041	9.05									Begin purge
1051	9.17	250	5.93	2.31	11.7	~~2~~ 1.90	14.97	-38	1.2	
1101	9.21		5.92	2.31	4.3	1.20	14.95	-41	1.2	
1108	9.19	280	5.92	2.32	2.6	1.12	14.94	-42	1.2	
1115	9.20		5.92	2.32	0.5	1.06	14.95	-44	1.2	
1120	9.21	280	5.92	2.32	0.0	1.03	14.88	-44	1.2	
1125	9.21		5.92	2.32	0.0	1.02	14.86	-45	1.2	Begin Sampling
1135										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-27B-042115
Sample Location: MRC-MW-27B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/21/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time:	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	Clear	4.57	0.300	17.68	0.0	6.23	0.1	277

PURGE DATA:

Date: 4/21/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1230								
End Purge (hrs): 1340								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 4.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40mL glass	3
Metals (Total)	Nitric Acid	1x500mL plastic	1
Alkalinity	None	1x250mL plastic	1
NH_3	H_2SO_4	1x250mL plastic	1
Cl, NO_2, NO_3, SO_4..	None	1x250mL plastic	1
RSK-175	HCl	3x40mL glass	3
TOC	H_2SO_4	1x250mL amber	1

OBSERVATIONS / NOTES:

Fe Iron

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-27B-042115
DATE: 4/21/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1230	12.33	~~250~~								Begin purging
1240	15.85	250	4.83	0.309	0.0	7.06	17.26	84	0.1	
1250	19.07	250	4.54	0.300	0.0	2.85	17.58	148	0.1	
1300	21.28		4.55	0.301	0.0	6.18	17.56	178	0.1	
1308	23.01	200	4.52	0.300	0.0	6.32	17.76	198	0.1	
1314	24.97		4.52	0.299	0.0	2.80	17.77	222	0.1	
1320	25.68	180	4.51	0.300	0.0	6.29	17.66	235	0.1	
1325	26.97		4.51	0.300	0.0	6.41	17.64	253	0.1	
1330	27.70	260	4.53	0.300	0.0	6.15	17.69	262	0.1	
1335	28.48		4.59	0.300	0.0	6.21	17.70	271	0.1	
1340	28.84		4.57	0.300	0.0	6.23	17.68	277	0.1	Begin sampling
1402										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-27C-0421/5
Sample Location: MRC-MW-27C
Sampled By: TO
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4/21/15								
Time: 1520								
Method: Low flow	clear	4.84	0.062	17.77	0.0	—	0.0	223

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/21/15								
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1414								
End Purge (hrs): 1520								
Total Purge Time (min): 66								
Total Vol. Purged (gal/L): 5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x 40mL glass	3

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-27C-042115
DATE: 4/21/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1414	12.57									Begin purging
1424	12.65	240	5.28	0.115	73.7	2.78	17.77	188	0.1	
1433	12.68	250	5.15	0.107	2.4	2.34	17.59	208	0.0	
1441	12.71	360	5.14	0.098	0.8	2.11	17.67	216	0.0	
1448	12.72	320	5.12	0.083	0.0	1.75	17.68	213	0.0	
1454	12.75	380	5.00	0.072	0.0	1.42	17.70	218	0.0	
1500	12.75	370	4.93	0.067	0.0	1.30	17.72	221	0.0	
1 1505	12.78		4.95	0.065	0.0	1.18	17.71	218	0.0	
2 1510	12.76	320	4.88	0.064	0.0	1.12	17.72	222	0.0	
3 1515	12.76		4.90	0.063	0.0	1.07	17.75	222	0.0	
1520	12.76		4.84	0.062	0.0	—	17.77	223	0.0	Begin Sampling
1522										Sampling complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112EC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-29A-042115
Sample Location: MW-29A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-21-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other chl
Time: 0929								
Method: Peristaltic pump	Clear	4.57	1.11	14.47	5.98	0.00	0.5	235

PURGE DATA:

Date: 4-21-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):			See	low	flow	purge		
Static Water Level (WL): 4.65								
One Casing Volume(gal/L):			Data	sheet				
Start Purge (hrs): 0838								
End Purge (hrs): 0924								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 5.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pe

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center — **WELL ID.:** MRC-MW-29A-042115
PROJECT NUMBER: 112IC06247 — **DATE:** 4-21-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0838	4.65	—	—	—	—	—	—	—	—	Initial, no odor
0839	4.80	300	4.05	1.25	15.4	1.46	14.63	295	0.6	Slightly Cloudy
0844	4.80	300	4.11	1.26	12.2	0.48	14.55	299	0.6	↓
0849	4.80	300	4.13	1.22	13.3	0.20	14.35	300	0.6	
0854	4.80	300	4.14	1.07	13.0	0.18	14.40	294	0.5	↓
0909	4.80	300	4.32	1.09	9.70	0.09	14.43	261	0.5	Clear water
0914	4.80	300	4.42	1.11	6.07	0.06	14.45	244	0.5	↓
0919	4.80	300	4.46	1.11	6.00	0.00	14.42	240	0.5	
0924	4.80	300	4.51	1.11	5.98	0.00	14.47	235	0.5	↓
	←	Well parameters Stabilize						→		
	←		Sampling	Begins				→		

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112ICC6247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-30A-04 1515
Sample Location: 4/15/15
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/15/15 Time: 1110	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	6.46	1.84	11.44	3.6	4.19	0.9	194

PURGE DATA:

Date: 4/15/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1021								
End Purge (hrs): 1110								
Total Purge Time (min): 49								
Total Vol. Purged (gal/L): 3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (6020A)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-30A-041515
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1021	0.55									Begin purging
1031	1.02	260	6.35	1.79	13.3	4.97	11.34	263	0.9	
1039	1.16		6.44	1.77	11.7	4.64	11.25	247	0.9	
1046	1.21	320	6.47	1.76	8.5	4.52	11.28	234	0.9	
1053	1.22		6.51	1.78	6.9	4.43	11.33	206	0.9	
1100	1.24	320	6.48	1.80	2.9	4.21	11.41	200	0.9	
1105	1.25		6.47	1.82	3.1	4.28	11.43	197	0.9	
1110	1.26		6.46	1.84	3.6	4.19	11.44	194	0.9	Begin Sampling
1112										Sampling Complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRC-MW-31A-04151
Sample Location: MRC-MW-31A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4/15/15 Time: 1005								
Method: Low flow	clear	4.14	0.299	11.14	1.2	2.39	0.1	335

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/15/15								
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0913								
End Purge (hrs): 1005								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (6020A)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-31A-041515
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0913	2.46									Begin Purging
0923	3.49	280	4.23	0.230	7.4	4.78	11.23	306	0.1	
0931	3.70		4.21	0.243	5.4	3.69	11.21	316	0.1	
0938	3.73	260	4.18	0.256	3.5	3.27	11.21	322	0.1	
0944	3.80		4.15	0.276	2.5	3.07	11.16	327	0.1	
0950	3.85	290	4.16	0.285	1.7	2.94	11.17	330	0.1	
0955	3.86		4.15	0.292	1.3	2.82	11.19	332	0.1	
1000	3.91	300	4.13	0.298	1.4	2.90	11.21	334	0.1	
1005	3.94		4.14	0.299	1.2	2.89	11.14	335	0.1	Begin Sampling
1007										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: ~~Montgomery State Airport~~ MRC
Project No.: ~~112F07335~~ 112ZC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-32A-040315
Sample Location: MW-32A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4-13-15								
Time: 0951								Orp
Method: Peristaltic pump	Clean	5.06	0.822	11.47	5.0	3.98	NA	362

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-13-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):		See low flow purge						
Static Water Level (WL): 3.25								
One Casing Volume(gal/L):		Data sheet						
Start Purge (hrs): 0900								
End Purge (hrs): 0946								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Walt Pe

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Martin Middle River Centers
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-32A-041315
DATE: 4-13-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0900	5.25	—	—	—	—	—	—	—	—	Initial, no odor
0901	4.30	300	4.70	0.857	596	4.96	12.44	342	NA	Cloudy water
0906	4.70	300	4.73	0.845	338	4.26	11.88	356		
0911	4.75	250	4.77	0.845	119	4.05	11.63	364		
0921	5.00	200	4.99	0.837	16.9	4.12	11.53	364		
0931	5.25	100	5.14	0.822	13.2	4.17	11.45	354		
0936	5.30	100	5.10	0.823	8.3	4.06	11.46	359		Clear water
0941	5.35	100	5.09	0.823	5.2	4.02	11.46	360		
0946	5.40	100	5.06	0.822	5.0	3.98	11.47	362		
				Well parameters Stabilize						
				Sampling Begins						

SIGNATURE(S): Walt Pa

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRL-MW-33A-0415
Sample Location: MRL-MW-33A
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/15/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 0855								ORP
Method: Low flow	clear	4.92	0.154	11.53	2.6	3.41	0.1	270

PURGE DATA:

Date: 4/15/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0804								
End Purge (hrs): 0855								
Total Purge Time (min): 51								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3 x 40mL glass	3
Total Metals (6020A)	Nitric Acid	1 x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-33A-041515
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0804	1.52									Begin Purging
0814	2.75	260	4.76	0.132	5.8	3.65	11.57	258	0.1	
0822	3.07		4.74	0.131	4.6	3.13	11.43	262	0.1	
0829	3.19	290	4.77	0.135	4.2	3.27	11.48	266	0.1	
0835	3.27		4.84	0.142	2.6	3.47	11.47	267	0.1	
0840	3.31	300	4.88	0.148	2.6	3.58	11.43	268	0.1	
0845	3.35		4.91	0.150	2.7	3.49	11.47	269	0.1	
0850	3.37	320	4.90	0.151	2.6	3.35	11.55	271	0.1	
0855	3.40		4.92	0.154	2.6	3.41	11.53	270	0.1	
0858										Begin Sampling Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-34A-041315
Sample Location: MW-34A
Sampled By: MP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-13-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1102								
Method: Peristaltic pump	clear	6.01	0.153	11.63	0.0	6.40	NA	ORP 11.63

PURGE DATA:

Date: 4-13-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See	low	flow	purge		
Total Well Depth (TD):								
Static Water Level (WL): 3.60			Data	Sheet				
One Casing Volume(gal/L):								
Start Purge (hrs): 1011								
End Purge (hrs): 1057								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 5.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt B

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-36A-041315
DATE: 4-13-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1011	3.60	—	—	—	—	—	—	—	—	Initial, no odor
1012	3.85	300	6.07	0.161	64.0	8.41	12.11	272	NA	slightly cloudy
1017	3.90	300	6.08	0.154	60.7	7.18	11.62	269		↓
1022	3.90	300	6.04	0.152	33.3	7.05	11.47	266		↓
1032	3.90	300	6.05	0.152	4.5	6.94	11.48	263		Clear water
1042	3.90	300	6.03	0.151	0.0	6.66	11.45	263		↓
1047	3.90	300	6.03	0.152	0.0	6.48	11.52	265		↓
1052	3.90	300	6.03	0.153	0.0	6.42	11.53	265		↓
1057	3.90	300	6.01	0.153	0.0	6.40	11.63	263	↓	↓
				Well Parameters Stabilize						
				Sampling Begins						

SIGNATURE(S): Walt Rz

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-34B-04/15
Sample Location: MW-34B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4-13-15								
Time: 1441								
Method: Peristaltic pump	Clear	4.39	0.610	17.22	0.0	0.02	NA	ORP 376

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-13-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See Low Flow purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 3.47								
One Casing Volume(gal/L):								
Start Purge (hrs): 1350								
End Purge (hrs): 1436								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
NAA	-	8 - bottles	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pe

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-34B-041315
DATE: 4-13-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1351	3.47	—	—	—	—	—	—	—	—	Initial, Water
1351	3.90	300	4.47	0.554	0.0	7.64	21.98	291	NA	Clear
1356	3.80	300	4.49	0.560	0.0	0.61	21.21	315		
1401	3.80	300	4.55	0.594	0.0	0.26	18.46	333		
1411	3.80	300	4.55	0.598	0.0	0.16	17.79	348		
1421	3.80	300	4.48	0.607	0.0	0.04	17.38	362		
1426	3.80	300	4.44	0.607	0.0	0.03	17.46	368		
1431	3.80	300	4.41	0.609	0.0	0.03	17.36	370		
1436	3.80	300	4.39	0.610	0.0	0.02	17.22	376		
			Well parameters Stabilized							
			Sampling Begins							

SIGNATURE(S): Walt

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-34C-040315
Sample Location: MW-34C
Sampled By: VP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-13-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1546								ORP
Method: Peristaltic pump	Clear	5.83	0.085	16.28	0.0	0.45	NA	252

PURGE DATA:

Date: 4-13-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low flow purge Data sheet					
Total Well Depth (TD):								
Static Water Level (WL): 3.30								
One Casing Volume(gal/L):								
Start Purge (hrs): 1455								
End Purge (hrs): 1541								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-34C-041315
DATE: 4-13-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1455	3.30	—	—	—	—	—	—		—	Initial, no odor
1456	3.55	300	5.71	0.089	0.0	0.81	15.55	272	NA	Clear Water
1501	3.55	300	5.69	0.088	0.0	0.75	15.45	272		
1506	3.55	300	5.73	0.087	0.0	0.63	15.35	267		
1516	3.55	300	5.76	0.087	0.0	0.53	15.55	262		
1526	3.55	300	5.82	0.086	0.0	0.47	15.84	256		
1531	3.55	300	5.82	0.086	0.0	0.47	16.01	254		
1536	3.55	300	5.83	0.085	0.0	0.46	16.15	252		
1541	3.55	300	5.83	0.085	0.0	0.45	16.28	250		
			Well parameters Stabilize							
			Sampling Begins							

SIGNATURE(S): Walt R

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-37A
Sample Location: MRC
Sampled By: JMA
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1345								
Method: peri pump	clear	5.51	0.578	17.09	17.0	2.41	23	243

PURGE DATA:

Date: 5/4/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 7.47								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1270								
End Purge (hrs): 1345								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
RSK-175	HCl	3-40 mL vials	✓
Alkalinity	—	1-250 mL poly	✓
NH3	H_2SO_4	1-250 mL poly	✓
TOC-dissolved	~~H_2SO_4~~ None	1-250 mL amber	✓
Cl, NO3, NO2, ORDP, TDS, SI	—	1-250 mL poly	✓
Total Metals	HNO_3	1-500 mL poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-37A-050415
DATE: 5/4/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1230	7.47	—	—	—	—	—	—	—	—	
1235	7.99	200	5.64	0.520	OVR	3.80	24.37	222	0.3	
1240	8.23	200	5.60	0.573	779	3.38	18.96	232	0.3	
1245	8.49	200	5.59	0.579	98	3.24	17.88	234	0.3	
1250	8.69	200	5.57	0.581	56	3.20	17.59	236	0.3	
1255	8.89	200	5.58	0.584	113	3.16	17.34	237	0.3	
1300	9.04	200	5.59	0.584	96.5	3.21	17.16	237	0.3	
1305	9.20	200	5.59	0.583	83.9	3.29	17.08	238	0.3	
1310	9.31	200	5.58	0.581	65.7	3.26	17.14	239	~~0.0~~ 0.3	
1315	9.39	200	5.58	0.579	55.9	3.47	17.16	238	0.3	
1320	9.49	200	5.57	0.578	42.6	3.36	17.04	238	0.3	
1325	9.55	200	5.56	0.578	29.4	3.12	16.99	239	0.3	
1330	9.63	200	5.55	0.578	22.5	2.90	17.02	240	0.3	
1335	9.70	200	5.53	0.577	13.8	2.63	17.00	241	0.3	
1340	9.77	200	5.53	0.576	19.8	2.55	17.15	242	0.3	
1345	9.81	200	5.51	0.578	17.0	2.41	17.07	243	0.3	
	Sample VOCs, Total Metals, MEE-WNA parameters									

SIGNATURE(S): [signature]

PAGE 1 OF 1

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GROUNDWATER SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: MRL Low 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRL-MW-37B-050415
Sample Location: MRL
Sampled By: JBM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1130	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: Peri pump	Clear	5.58	0.272	15.90	3.85	0.71	0.1	202

PURGE DATA:

Date: 5/4/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 5.17								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1045								
End Purge (hrs): 1130								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
RSK-175	HCl	3-40 mL vials	✓
Alkalinity	—	1-250 mL poly	✓
NH3	H_2SO_4	1-250 mL ~~amber~~ poly	✓
TOC-Dissolved	~~H_2SO_4~~ NONE	1-250 mL amber	✓
Cl, NO_3, Mn, SO_4, OPO4, TDS, Si	—	1-250 mL poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015 | WELL ID.: MRC-MW-37B
PROJECT NUMBER: 117106247 | DATE: 5/4/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1045	5.17	-	-	-	-	-	-	-	-	
1050	5.69	200	5.74	0.230	18.8	2.24	15.58	174	0.1	
1055	5.89	200	5.63	0.232	12.3	1.37	15.28	184	0.1	
1100	5.97	200	5.62	0.233	10.89	1.15	15.30	189	0.1	
1105	6.01	200	5.62	0.234	8.05	1.06	15.45	192	0.1	
1110	6.01	200	5.62	0.233	6.45	1.01	15.73	193	0.1	
1115	6.04	200	5.60	0.234	4.93	0.90	15.69	197	0.1	
1120	6.06	200	5.59	0.233	5.71	0.81	15.77	198	0.1	
1125	6.06	200	5.58	0.232	4.52	0.73	15.67	200	0.1	
1130	6.09	200	5.58	0.232	3.85	0.71	15.90	202	0.1	
	Sample VOCs, MRA+MEE @ 1130									

SIGNATURE(S): _____

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112G06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-37C
Sample Location: MRC
Sampled By: JRM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1030	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: peri pump	clear	5.46	0.084	15.85	7.30	0.02	0.0	38

PURGE DATA:

Date: 5/4/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE Low Flow PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 5.38								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0915								
End Purge (hrs): 1030								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL VIALS	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015 WELL ID.: MRL-MW-37C
PROJECT NUMBER: 112I006247 DATE: 5/4/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0915	5.38	—	—	—	—	—	—	—	—	
0920	6.20	200	6.08	0.626	46	4.32	16.65	-21	0.3	
0925	7.05	200	6.35	0.397	30.8	1.03	15.31	-84	0.2	
0930	7.99	200	6.41	0.274	H347.4	0.56	15.15	-89	0.1	
0935	9.10	200	6.42	0.216	18.7	0.28	15.06	-97	0.1	
0940	9.85	200	6.42	0.197	10.79	0.19	15.15	-93	0.1	
0945	10.49	200	6.31	0.181	8.43	0.18	15.21	-74	0.1	
0950	11.28	200	6.16	0.156	11.5	0.12	15.22	-45	0.1	
0955	12.05	200	6.02	0.129	11.0	0.09	15.25	-20	0.1	
1000	12.60	200	6.03	0.113	10.95	0.10	15.37	-6	0.1	
1005	13.50	200	6.04	0.104	12.3	0.04	15.53	-56	0.0	
1010	14.35	200	6.14	0.122	12.4	0.07	15.69	-40	0.1	
1015	15.35	200	6.01	0.101	11.7	0.09	15.84	5	0.0	
1020	16.10	200	5.97	0.090	11.13	0.06	15.87	28	0.0	
1025	16.15	200	5.97	0.086	7.38	0.03	15.87	35	0.0	
1030	16.20	200	5.96	0.084	7.30	0.02	15.89	38	0.0	
	Sample VOCs @ 1030									

SIGNATURE(S): _____

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-38A-042715
Sample Location: MW-38A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4.27.15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1233	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Peristaltic pump	Clear	4.57	0.046	14.15	6.8	3.50	0.0	365

PURGE DATA:

Date: 4-27-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge Data sheet						
Total Well Depth (TD):								
Static Water Level (WL): 4.05								
One Casing Volume(gal/L):								
Start Purge (hrs): 1142								
End Purge (hrs): 1228								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Perchlorate	—	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IL06247

WELL ID.: MRC-MW-38A-042715
DATE: 4-27-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1142	4.05	—	—	—	—	—	—	—	—	Initial pre calibration
1143	4.87	300	4.55	0.088	102	3.70	14.66	328	0.0	Cloudy Water
1148	5.90	300	4.56	0.088	76.5	3.66	14.58	331	0.0	
1153	5.91	100	4.55	0.088	52.4	3.64	14.59	337	0.0	
1203	5.91	100	4.54	0.088	28.8	3.74	14.58	345	0.0	
1213	5.91	100	4.55	0.087	10.5	3.67	14.45	358	0.0	Clean Water
1218	5.91	100	4.56	0.086	6.7	3.54	14.33	354	0.0	
1223	5.91	100	4.56	0.086	6.8	3.52	14.20	363	0.0	
1228	5.91	100	4.57	0.086	6.8	3.50	14.15	365	0.0	
			Well parameter stabilize							
			Sampling Begin							

SIGNATURE(S): [signature]

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-38B-042715
Sample Location: MW-38B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-27-15 / Time: 1433	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	4.61	0.051	17.41	0.0	7.82	0.0	361

PURGE DATA:

Date: 4-27-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 4.60								
One Casing Volume(gal/L):								
Start Purge (hrs): 1337								
End Purge (hrs): 1428								
Total Purge Time (min): 51								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pa

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112RC06247
WELL ID.: MRC-MW-388-042718
DATE: 4-27-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1337	4.60	—	—	—	—	—	—	—	—	Initial, no odor
1338	5.27	300	4.52	0.050	22.8	3.84	13.42	337	0.0	Slightly cloudy
1343	5.70	200	4.50	0.051	12.3	3.28	12.41	347	0.0	↓
1348	5.75	150	4.52	0.051	5.9	3.01	12.33	353	0.0	Clear water
1358	5.58	100	4.55	0.051	4.3	2.95	12.43	364	0.0	↓
1408	5.54	104	4.60	0.051	0.0	2.83	12.42	362	0.0	↓
1418	5.58	100	4.61	0.051	0.0	2.81	12.41	361	0.0	↓
1428	5.54	100	4.61	0.051	0.0	2.82	12.41	361	0.0	↓
			Well parameters Stabilized							
			Sampling Begins							

SIGNATURE(S): _____

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: ~~Martin State Airport~~ LMMRC
Project No.: ~~112IC06183~~ 112IC06247

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-41A-051315
Sample Location: MRC-MW-41A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1355								ORP
Method: Low flow	Clear	6.24	3.23	14.79	5.7	0.00	1.7	-71

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1251								
End Purge (hrs): 1355								
Total Purge Time (min): 64								
Total Vol. Purged (gal/L): 4gal								

See Low Flow Purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 ~~6~~ 40 mL vials	3
Total Metals	HNO3	1-500 mL plastic	1
~~Dissolved Metals~~	~~HNO3~~	~~1-500 mL plastic~~	
1,4-Dioxane	None	~~2-250 mL ambers~~ 1-500mL amber	1
~~TPH-GRO~~	~~HCL~~	~~2-40 mL vials~~	
~~TPH-DRO~~	~~None~~	~~2-250 mL ambers~~	
Perchlorate	None	1-250 mL plastic	1
~~Hexavalent Chromium~~	~~None~~	~~1-250 mL plastic~~	
~~Radium 224, 226, 228~~	~~HNO3~~	~~3-1 L plastics~~	
~~Haloacetic Acids~~	~~None~~	~~2-250 mL ambers~~	
~~Natural Attenuation Parameters~~	~~See Notes~~	~~See Notes~~	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112ICO6247
WELL ID.: MRC-MW-41A-051315
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1251	8.99									Begin Purging
1301	9.93	280	6.28	3.31	4.5	0.03	14.57	-72	1.7	
1310	10.67		6.29	3.32	4.1	0.00	14.53	-76	1.7	
1318	11.58	300	6.31	3.35	6.4	0.00	14.47	-83	1.7	
1325	12.09		6.32	3.44	5.0	0.01	14.67	-85	1.8	
1333	12.57	260	6.27	3.35	4.9	0.00	14.60	-75	1.8	
1340	13.07		6.24	3.26	5.7	0.00	14.55	-69	1.7	
1345	13.38	250	6.22	3.22	7.4	0.00	14.81	-67	1.7	
1350	13.67		6.23	3.21	6.3	0.00	14.90	-69	1.7	
1355	13.89	250	6.24	3.23	5.7	0.00	14.79	-71	1.7	Begin Sampling
1401										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: ~~Martin State Airport~~ LMMRC
Project No.: ~~112IC06183~~ 112IC06247

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-42A-051315
Sample Location: LMMRC-MW-42A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/13/15								ORP
Time: 0925	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	
Method: Low Flow	clear	5.49	3.85	15.71	6.3	0.00	2.0	-1

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/13/15								
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0827								
End Purge (hrs): 0925								
Total Purge Time (min): 58								
Total Vol. Purged (gal/L): 2.5 gal								

See Low Flow Purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
~~VOCs~~	~~HCl~~	~~3 @ 40 mL vials~~	
Total Metals	HNO3	1-500 mL plastic	1
~~Dissolved Metals~~	~~HNO3~~	~~1-500 mL plastic~~	
~~1,4-Dioxane~~	~~None~~	~~2-250 mL ambers~~	
~~TPH-GRO~~	~~HCL~~	~~2-40 mL vials~~	
~~TPH-DRO~~	~~None~~	~~2-250 mL ambers~~	
~~Perchlorate~~	~~None~~	~~1-250 mL plastic~~	
~~Hexavalent Chromium~~	~~None~~	~~1-250 mL plastic~~	
~~Radium 224, 226, 228~~	~~HNO3~~	~~3-1 L plastics~~	
~~Haloacetic Acids~~	~~None~~	~~2-250 mL ambers~~	
~~Natural Attenuation Parameters~~	~~See Notes~~	~~See Notes~~	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-42A-051315
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0827	10.53									Begin Purging
0837	12.04	220	5.18	4.16	0.0	0.13	16.06	49	2.2	
0846	12.71		5.07	3.99	5.6	0.08	15.76	69	2.1	
0854	13.22	240	5.20	3.80	6.9	0.00	15.68	54	2.0	
0901	13.78		5.40	3.77	9.6	0.00	15.66	18	2.0	
0908	14.19	240	5.52	3.75	5.6	0.00	15.65	-4	2.0	
2 0914	14.47		5.53	3.73	5.6	0.00	15.73	-7	2.0	
3 0920	14.82	240	5.53	3.79	6.2	0.00	15.72	-6	2.0	
0925	15.10		5.49	3.85	6.3	0.00	15.71	-1	2.0	Begin Sampling
0927										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRC-MW-~~6~~43A-04/14/15
Sample Location: MRC-MW-~~6~~43A
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/14/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0820								
Method: Low Flow	clear	5.45	0.183	11.97	7.0	2.29	0.1	134

PURGE DATA:

Date: 4/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0736								
End Purge (hrs): 0820								
Total Purge Time (min): 44								
Total Vol. Purged (gal/L): 2.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	2 x 1L ambers	2

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-43A-041415
DATE: 4/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0736	1.05									Begin Purging
0746	2.87	260	5.50	0.181	54.8	3.47	12.35	119	0.1	
0752	3.20		5.47	0.172	51.4	2.80	12.21	113	0.1	
0759	3.47		5.43	0.174	30.9	2.60	12.12	123	0.1	
0805	3.41	260	5.42	0.177	17.9	2.56	12.10	129	0.1	
0810	3.40		5.42	0.179	11.1	2.58	12.03	134	0.1	
0815	3.53	250	5.41	0.183	9.4	2.39	11.97	135	0.1	
0820	3.62		5.45	0.183	7.0	2.29	11.97	134	0.1	Begin sampling
0825										Finished Sampling

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRC-MW-44A-04/14/15
Sample Location: MRC-MW-44A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4/14/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0955								
Method: Low Flow	clear	6.89	0.521	10.97	2.2	1.51	0.2	~~-93~~ -103

PURGE DATA:

Date: 4/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0906								
End Purge (hrs): 0955								
Total Purge Time (min): 49								
Total Vol. Purged (gal/L): 3.59al								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	2x1L ambers	2
1,4 dioxane (522)	$NaHSO_4$	1x500mL amber	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-44A-041415
DATE: 4/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0906	1.81									Begin Purging
0916	2.15	340	6.71	0.502	9.4	2.93	10.53	-46	0.2	
0924	2.48		6.77	0.516	6.5	2.21	10.65	-73	0.2	
0931	2.41	320	6.81	0.519	4.0	1.78	10.73	-86	0.2	
1 0938	2.45		6.84	0.519	3.2	1.64	10.81	-93	0.2	
2 0945	2.47	330	6.85	0.519	3.2	1.55	10.93	-99	0.2	
3 0950	2.48		6.86	0.519	2.2	1.52	10.97	-102	0.2	
0955	2.49		6.89	0.521	2.2	1.51	10.97	-103	0.2	Begin Sampling
1007										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112-IC0624-7

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-46A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/1/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1315	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: peri pump	clear	6.57	0.444	12.80	6.22	1.72	0.2	138

PURGE DATA:

Date: 5/1/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 13'		SEE LOW FLOW PURGE DATA SHEET						
Static Water Level (WL): 4.41								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1215								
End Purge (hrs): 1315								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals	HNO3	1-500 mL Plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015 WELL ID.: MRC-MW-46A
PROJECT NUMBER: 117-I06247 DATE: 5/1/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1215	4.41	—	—	—	—	—	—	—	—	
1220	4.82	200	6.65	0.576	34.9	~~4.46~~ 2.41	14.68	103	0.3	
1225	5.06	200	6.66	0.520	26.6	1.96	13.83	90	0.2	
1230	5.30	200	6.64	0.499	21.9	1.69	13.49	91	0.2	
1235	5.45	200	6.62	0.488	21.2	1.35	1333	99	0.2	
1240	5.64	200	6.61	0.477	16.0	0.84	13.20	113	0.2	
1245	5.78	200	6.59	0.466	16.2	0.99	13.10	120	0.2	
1250	5.98	200	6.58	0.456	16.3	1.25	13.03	130	0.2	
1255	6.18	200	6.57	0.450	17.3	1.40	12.97	135	0.2	
1300	6.28	200	6.57	0.448	15.6	1.41	12.92	137	0.2	
1305	6.39	200	6.57	0.447	12.2	1.39	12.89	139	0.2	
1310	6.51	200	6.57	0.445	9.55	1.30	12.90	140	0.2	
1315	6.59	200	6.57	0.444	6.22	1.22	12.80	138	0.2	
	Sample Total Metals @ 1315									

SIGNATURE(S): _____

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRL
Project No.: 112IC06247

Sample ID No.: MRC-MW-48A-051315 ~~EMC~~
Sample Location: MRC-MW-48A
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1040								
Method: Low flow	clear	6.31	0.724	15.86	3.0	0.00	0.4	-99

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0954								
End Purge (hrs): 1040								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 3gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3 x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1 x 500mL plastic	1
Alkalinity	None	1x 250mL plastic	1
RSK-175	HCl	3 x 40mL glass	3
Dissolved TOC	None	1x 250mL amber	1
NH_3	H_2SO_4	1x 250mL plastic	1
Cl, NO_2, NO_3, SO_4, OPO_4, TDS, Si	None	1x 250mL plastic	1

OBSERVATIONS / NOTES:

QC If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-48A-051315
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0954	7.97									Begin Purging
1004	8.98	250	6.34	0.764	6.9	0.08	15.79	-89	0.4	
1013	9.14		6.36	0.719	4.8	0.00	15.72	-98	0.3	
1021	9.22	250	6.37	0.713	3.6	0.00	15.69	-103	0.3	
1028	9.23		6.35	0.717	3.3	0.00	15.85	-103	0.3	
1034	9.24	250	6.33	0.723	2.9	0.00	15.82	-101	0.4	
1040	9.27		6.31	0.724	3.0	0.00	15.86	-99	0.4	Begin Sampling
1050										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-49A-042415
Sample Location: MRC-MW-49A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/24/15 Time: 1225	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	5.16	12.8	14.76	2.9	3.75	7.3	115

PURGE DATA:

Date: 4/24/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1105								
End Purge (hrs): 1225								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (Hg)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRL
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-49A-042415
DATE: 4/24/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1105	10.83									Begin Purging
1115	11.77	260	5.43	13.0	4.0	4.07	14.38	22	7.4	
1124	12.39		6.19	11.3	3.6	4.29	14.07	-10	6.3	
1132	12.94	280	5.93	10.4	2.6	4.59	13.94	22	5.8	
1139	13.45		5.73	10.9	3.1	4.56	13.95	43	6.1	
1145	13.82	240	5.59	11.2	4.0	4.58	14.08	59	6.3	
1150	14.15		5.46	11.5	3.7	4.57	14.10	72	6.5	
1155	14.45	240	5.36	11.8	3.6	4.51	14.14	82	6.7	
1200	14.76		5.29	12.1	2.5	4.43	14.37	91	6.8	
1205	15.00	220	5.27	12.2	2.8	4.40	14.33	95	6.9	
1210	15.22		5.26	12.3	2.6	3.92	14.44	101	7.0	
1215	15.46	200	5.21	12.5	2.9	3.87	14.55	106	7.1	
1220	15.71		5.18	12.5	2.4	3.77	14.63	111	7.1	
1225	15.91		5.16	12.8	2.9	3.75	14.76	115	7.3	Begin Sampling
1228										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112G06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-50A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/5/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1210								
Method: peri pump	clear	4.85	6.17	21.39	2.49	QFI	3.3	228

PURGE DATA:

Date: 5/5/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE Low Flow PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 13.67								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1120								
End Purge (hrs): 1210								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
Total Metals	HNO3	1-500 mL poly	✓
Perchlorate	—	1-250 mL poly	✓

OBSERVATIONS / NOTES:

A MRC-MW-DUP04-050515

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	MRC-MW-DUP04-050515

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112-EC06247
WELL ID.: MRC-MW-50A
DATE: 5/5/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1120	13.67	—	—	—	—	—	—	—	—	
1125	14.10	200	4.54	5.63	10.12	1.57	24.97	269	3.0	
1130	14.21	200	4.83	5.92	6.06	1.08	22.73	257	3.2	
1135	14.24	200	4.87	6.02	6.15	1.00	22.63	252	3.3	
1140	14.35	200	4.87	6.04	4.11	0.91	22.17	247	3.3	
1145	14.37	200	4.86	6.10	6.08	0.90	21.78	245	3.3	
1150	14.39	200	4.86	6.13	4.92	0.87	21.35	241	3.3	
1155	14.40	200	4.85	6.16	4.18	0.86	21.20	238	3.3	
1200	14.40	200	4.85	6.18	4.62	0.84	21.18	234	3.4	
1205	14.40	200	4.84	6.18	3.29	0.84	21.23	231	3.4	
1210	14.40	200	4.85	6.17	2.49	0.81	21.35	228	3.3	
	Sample VOCs	Total Metals, Perch @ 1210								
	~~A~~	MRC-MW-0A04-050515 ~~A~~								

SIGNATURE(S): _____

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117IC06247

Sample ID No.: MRC-MW-52A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4/20/15 Time: 1040								ORP
Method: per pump	clear	4.28	4.10	13.71	3.03	0.00	2.1	209

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/20/15								
Method: per pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge data sheet						
Total Well Depth (TD): -								
Static Water Level (WL): 5.13								
One Casing Volume(gal/L): -								
Start Purge (hrs): 0955								
End Purge (hrs): 1040								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Perchlorate	-	1-250 mL poly	✓
Total Metals	HNO3	1-500 mL poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC LW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-52A-042015
DATE: 4/20/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0955	5.73	—	—	—	—	—	—	—	—	
1000	6.12	300	4.36	4.02	19.7	0.26	13.51	236	2.1	
1005	6.40	300	4.33	4.07	11.86	0.16	13.19	235	2.1	
1010	6.62	300	~~4.07~~ 4.32	~~12~~ 4.07	12.69	0.11	13.29	233	2.1	
1015	6.85	300	4.34	4.07	9.62	0.01	13.47	230	2.1	
1020	7.00	300	4.35	4.08	7.80	0.02	13.52	220	2.1	
1025	7.11	300	4.35	4.07	7.21	0.00	13.77	216	2.1	
1030	7.22	300	4.29	4.08	5.70	0.00	13.90	211	2.1	
1035	7.25	300	4.28	4.09	3.68	0.00	13.78	210	2.1	
1040	7.28	300	4.28	4.10	3.03	0.00	13.71	209	2.1	
	Sample	Perchlorate + Total Metals @ 1040								

SIGNATURE(S): [signature]

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LM Middle River Complex
Project No.: 112C06247

Sample ID No.: MRC-MW-53A-04/16/15
Sample Location: MRC-MW-53A
Sampled By: FG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/16/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1010	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	clear	5.60	2.27	16.76	3.4	1.79	1.2	179

PURGE DATA:

Date: 4/16/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0926								
End Purge (hrs): 1010								
Total Purge Time (min): 44								
Total Vol. Purged (gal/L): 2 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x 40mL glass	3
1,4 dioxane (522)	~~H_2SO_4~~ $NaHSO_4$	1x 500mL amber	1
perchlorate (ClO_4)	None	1x 250mL plastic	1
Total Metals ~~(6020)~~ (Hg)	Nitric Acid	1x 500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-53A-041615
DATE: 4/16/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0926	4.00									Begin Purging
0936	4.13	200	5.76	2.33	7.2	2.75	15.90	144	1.2	
0944	4.19		5.72	2.32	8.4	2.07	16.27	159	1.2	
0951	4.21	260	5.71	2.30	9.0	1.88	16.50	169	1.2	
0958	4.23		5.70	2.29	7.2	1.89	16.62	173	1.2	
1004	4.24	300	5.67	2.28	4.9	1.81	16.67	177	1.2	
1010	4.23		5.66	2.27	3.4	1.79	16.76	179	1.2	Begin Sampling
1017										Sampling Complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112I06247

Sample ID No.: MRC-MW-53B-04/16/15
Sample Location: MRC-MW-53B
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/16/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0900								
Method: Low flow	clear	6.20	2.46	12.75	5.5	6.41	1.3	42

PURGE DATA:

Date: 4/16/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0749								
End Purge (hrs): 0900								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620)	HCl	3x40mL glass	3
1,4 dioxane (522)	$NaHSO_4$	1x500mL amber	1
Perchlorate (ClO_4)	None	1x250mL plastic	1
Total Metals (Hg)	Nitric Acid	1x500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: ~~LMC~~ LMC Middle River
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-53B-04/615
DATE: 4/16/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0749	4.55									Begin purging
0759	5.07	260	6.20	2.31	24.4	2.94	12.81	188	1.2	
0808	5.43		6.24	2.67	12.2	2.20	12.57	119	1.4	
0816	5.80	300	6.29	2.84	16.6	2.39	12.58	56	1.5	
0823	6.03		6.30	2.86	12.1	2.30	12.60	37	1.5	
0829	6.18	300	6.28	2.78	8.4	2.26	12.53	31	1.4	
0835	6.29		6.27	2.69	8.0	1.92	12.62	28	1.4	
0840	6.40	260	6.26	2.66	6.7	7.58	12.68	28	1.4	
1 0845	6.50		6.24	2.51	5.3	7.15	12.70	33	1.3	
2 0850	6.54	260	6.22	2.49	5.8	6.95	12.73	38	1.3	
3 0855	6.74		6.21	2.48	5.7	6.65	12.76	40	1.3	3
0900	6.83		6.20	2.46	5.5	6.41	12.75	42	1.3	Begin sampling
0907										Sampling complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MAC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MAC-MW-54A
Sample Location: MAC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/16/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 0910								ORP
Method: peristaltic pump	clear	5.63	1.05	11.90	3.62	0.00	0.5	94

PURGE DATA:

Date: 4/16/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): ~								
Static Water Level (WL): 3.50								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0800								
End Purge (hrs): 0910								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): ~5								

See Low Flow Purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1-4 Dioxane	NaHSO4	1-500 mL amber	✓
Perchlorate	—	1-125 mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-54A
DATE: 4/16/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0800	3.50	—	—	—	—	—	—	—	—	
0805	4.17	300	5.27	0.144	54	0.69	13.41	90	0.1	
0810	4.28	300	5.38	0.132	74	0.25	12.53	84	0.1	
0815	4.36	300	5.41	0.135	49.9	0.13	12.16	85	0.1	
0820	4.41	300	5.42	0.156	34.8	0.08	12.07	87	0.1	
0825	4.45	300	5.48	0.229	26.7	0.02	11.99	88	0.1	
0830	4.48	300	5.50	0.299	17.4	0.00	11.93	89	0.1	
0835	4.50	300	5.54	0.394	12.6	0.00	12.06	89	0.1	
0840	4.52	300	5.55	0.500	11.82	0.00	12.03	90	0.2	
0845	4.53	300	5.57	0.594	9.63	0.00	12.03	90	0.3	
0850	4.55	300	5.59	0.777	6.93	0.00	12.00	92	0.4	
0855	4.57	300	5.60	0.824	5.22	0.00	11.94	91	0.4	
0900	4.58	300	5.62	1.01	4.56	0.00	11.90	94	0.5	
0905	4.58	300	5.63	1.03	3.85	0.00	11.90	94	0.5	
0910	4.58	300	5.63	1.05	3.62	0.00	11.90	94	0.5	
		Sample 1-4 dioxane + Perchlorate @ 0910								

SIGNATURE(S): [signature]

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-57A-042415
Sample Location: MRC-MW-57A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/24/15 Time: 1030	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	Opaque white	7.27	9.80	12.85	15.2	1.20	5.5	-192

PURGE DATA:

Date: 4/24/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0936								
End Purge (hrs): 1030								
Total Purge Time (min): 54								
Total Vol. Purged (gal/L): 3.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x 40mL ~~Plastic~~ glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-57A-042415
DATE: 4/24/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0936	5.78									Begin Purging
0946	6.35	240	7.26	9.58	5.4	1.61	12.79	-157	5.3	
0955	6.88		7.34	9.28	4.7	1.39	12.99	-178	5.1	
1003	7.33	280	7.33	9.41	6.8	1.33	12.98	-186	5.2	
1011	7.76		7.38	9.63	10.0	1.30	12.89	-193	5.3	
1018	8.19	250	7.34	9.72	11.4	1.29	12.88	-195	5.4	
1024	8.55		7.31	9.75	13.7	1.23	12.93	-195	5.4	
1030	8.95		7.27	9.80	15.2	1.20	12.85	-192	5.5	Begin Sampling
1035										Sampling Complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112JC06247

Sample ID No.: MRC-MW-58A-042315
Sample Location: MW-58A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-23-15 / Time: 1506 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Cloudy	6.37	2.03	13.36	51.7	0.36	1.0	-24

PURGE DATA:

Date: 4-23-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow pump data sheet					
Total Well Depth (TD):								
Static Water Level (WL): ~~1321~~	3.95							
One Casing Volume(gal/L):								
Start Purge (hrs): 1321								
End Purge (hrs): 1501								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x3 40 ml VOA	✓
1,4 Dioxane	NaHSO4	2x2 500 ml Amber	✓

OBSERVATIONS / NOTES:

MRC-Dup02-042315 was collected

Circle if Applicable:

MS/MSD ✓ Duplicate ID No.:

Signature(s):

Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-58A-042315
DATE: 4-23-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1321	3.95	—	—	—	—	—	—	—	—	Initial, murky
1326	4.50	200	6.29	1.83	266	6.82	12.89	2	1.0	cloudy water
1331	6.00	200	6.40	2.46	190	0.49	13.23	-36	1.3	
1341	7.15	100	6.45	2.49	158	0.19	13.30	-46	1.3	
1351	8.00	100	6.45	2.48	137	0.06	13.37	-50	1.3	
1401	8.50	100	6.45	2.48	116	0.00	13.45	-51	1.3	
1411	8.70	100	6.44	2.46	105	0.00	13.42	-50	1.3	
1421	8.95	100	6.42	2.44	96	0.00	13.29	-48	1.3	
1431	9.35	100	6.48	2.06	37.6	0.66	13.36	-40	1.0	
1441	9.60	100	6.43	2.02	52.5	0.59	13.37	-31	1.0	
1451	9.85	100	6.35	2.01	54.0	0.43	13.35	-26	1.0	
1501	10.10	100	6.37	2.03	51.7	0.36	13.36	-24	1.0	
			Well parameters did not stabilize after 90 min of max purge time							
			Work plan Sampling Begins							

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-59A-0415
Sample Location: MRC-MW-59A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/24/15 Time: 0915	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	582	3.84	13.11	5.3	1.34	2.0	87

PURGE DATA:

Date: 4/24/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0825								
End Purge (hrs): 0915								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 3 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (Hg)	Nitric Acid	1 x 500 mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-59A-042415
DATE: 4/24/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0825	~~6.83~~ 5.83									Begin Purging
0835	6.58	300	5.70	3.59	19.2	2.70	13.77	86	1.9	
0844	7.23		5.63	3.54	12.0	1.88	13.53	89	1.9	
0852	7.95	330	5.65	3.66	12.8	1.58	13.26	95	1.9	
0859	8.38		5.67	3.71	15.6	1.40	13.14	95	1.9	
0905	8.75	250	5.72	3.76	10.6	1.37	13.18	92	2.0	
0910	9.04		5.76	3.79	6.2	1.35	13.10	90	2.0	
0915	9.35		5.82	3.84	5.3	1.34	13.11	87	2.0	Begin Sampling
~~0920~~ 0917										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-60A-042215
Sample Location: MRC-MW-60A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/22/15 / Time: 1055	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Method: Low flow	clear							

PURGE DATA:

Date: 4/22/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1003								
End Purge (hrs): 1055								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620)	HCl	3x40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL Plastic	1
Perchlorate (ClO_4)	None	1x 250mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-60A-042215
DATE: 4/22/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1003	12.60									Begin Purging
1013	12.93	300	5.54	0.346	20.9	3.11	15.70	7	0.2	
1022	12.97		5.56	0.351	10.0	2.08	15.50	-8	0.2	
1030	13.03	300	5.58	0.356	5.8	1.84	15.41	-17	0.2	
1037	13.29		5.60	0.360	5.8	1.66	15.36	-21	0.2	
1044	13.45	270	5.62	0.362	4.5	1.72	15.53	-24	0.2	
1050	13.54		5.62	0.362	4.1	1.68	15.61	-26	0.2	
1055	13.62		5.62	0.362	3.8	1.66	15.68	-28	0.2	Begin Sampling
1059										Sampling Complete

SIGNATURE(S):

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-60B-042215
Sample Location: MRC-MW-60B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4/22/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0935								
Method: Low flow	clear	5.35	0.216	17.35	8.2	1.82	0.1	97

PURGE DATA:

Date: 4/22/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0845								
End Purge (hrs): 0935								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 3gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620)	HCl	3x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL plastic	1
Perchlorate (ClO_4)	None	1x 250mL plastic	1
TOC	H_2SO_4	1x 250 mL amber	1
RSK-175	HCl	3x 40mL glass	3
Alkalinity	None	1x 250mL plastic	1
NH_3	H_2SO_4	1x 250mL plastic	1
Cl, NO_2, NO_3, SO_4, OPO_4	None	1x 250mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-60B-042215
DATE: 4/22/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0845	11.79									Begin purging
0855	12.70	240	5.37	0.222	50	2.57	17.09	157	0.1	
0904	12.77		5.35	0.214	41.8	2.30	17.12	123	0.1	
0912	12.94	280	5.35	0.214	25.0	2.07	17.22	114	0.1	
0919	12.96		5.34	0.215	12.1	1.98	17.22	106	0.1	
0925	12.97	280	5.34	0.215	12.0	1.89	17.33	101	0.1	
0930	12.98		5.35	0.216	9.9	1.83	17.44	98	0.1	
0935	12.99		5.35	0.216	8.2	1.82	17.35	97		Begin Sampling
0944										Sampling complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

Sample ID No.: MRC-MW-61A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/1/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 0900								ORP
Method: peri pump	clear	5.05	8.34	13.42	0.78	1.98	4.6	235

PURGE DATA:

Date: 5/1/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): -								
Static Water Level (WL): 4.90								
One Casing Volume(gal/L): -								
Start Purge (hrs): 0805								
End Purge (hrs): 0900								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals	HNO3	1-500 mL poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015
PROJECT NUMBER: 112EC06247
WELL ID.: MRL-MW-61A-050115
DATE: 5/1/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0805	4.90	-	-	-	-	-	-	-	-	
0810	5.09	200	4.52	12.3	23.1	3.43	14.81	257	7.0	
0815	5.19	200	4.60	11.5	13.3	2.81	14.22	252	6.4	
0820	5.31	200	4.63	10.1	7.46	2.51	13.85	251	5.6	
0825	5.44	200	4.77	9.40	4.93	2.60	13.67	247	5.2	
0830	5.55	200	4.85	9.09	4.23	2.75	13.56	244	5.0	
0835	5.66	200	5.01	8.82	3.32	2.83	13.49	238	4.9	
0840	5.77	200	5.05	8.53	3.54	2.75	13.43	236	4.7	
0845	5.88	200	5.08	8.42	2.43	2.54	13.41	235	4.6	
0850	5.98	200	5.07	8.39	~~2.38~~ 1.62	2.38	13.42	235	4.6	
0855	6.08	200	5.06	8.33	1.36	2.08	13.42	235	4.6	
0900	6.18	200	5.05	8.34	0.78	1.98	13.43	235	4.6	
		Sample	Total	Meters	@ 0900					

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRC-MW-6ZA-041315
Sample Location: MRC-MW-6ZA
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4/13/15								
Time: 1435								ORP
Method: Low Flow	clear	6.38	0.525	12.98	2.1	0.52	0.2	-35

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/13/15								
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1343								
End Purge (hrs): 1435								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 4.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	2 x 1L ambers	2
Total Metals (6020B)	Nitric Acid	1 x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-6ZA-041315
DATE: 4/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1343	0.86									Begin Purge
1353	3.28	300	6.29	0.485	12.3	1.01	13.19	-18	0.2	
1401	3.25		6.25	0.479	5.7	0.75	13.10	-19	0.2	
1409	3.27	300	6.26	0.491	6.9	0.69	13.08	-21	0.2	
1415	3.28		6.28	0.501	4.1	0.62	13.04	-24	0.2	
1 1420	3.26	300	6.31	0.507	3.6	0.57	13.01	-28	0.2	
2 1425	3.28		6.32	0.515	2.8	0.54	13.04	-31	0.2	
3 1430	3.29	300	6.34	0.521	2.5	0.51	12.98	-34	0.2	
1435	3.45		6.38	0.525	2.1	0.52	12.98	-35	0.2	Begin Sampling
1443										Sampling Complete

SIGNATURE(S):

62C

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-62C-041315
Sample Location: MRC-MW-62C
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1315								
Method: Low Flow	Clear	6.49	0.261	16.06	4.2	0.40	0.1	-114

PURGE DATA:

Date: 4/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1215								
End Purge (hrs): 1315								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 4gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (8260)	None	2 x 1L ambers	2
Total Metal (6020B)	Nitric Acid	1x 500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

GZ-C

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC ~~LMC~~ MW-62C-041315
DATE: 4/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1215	2.83									Begin Purging
1222	2.83	220	6.94	0.303	52.8	1.95	15.70	-141	0.1	
1228	2.87		6.76	0.297	7.3	1.15	15.68	-136	0.1	
1234	2.87	250	6.71	0.294	7.8	0.89	15.74	-134	0.1	
1240	2.87		6.65	0.289	11.8	0.79	15.80	-131	0.1	
1245	2.87	250	6.67	0.284	12.3	0.75	15.86	-128	0.1	
1250	2.87		6.61	0.280	13.1	0.58	15.86	-126	0.1	
1255	2.88	250	6.56	0.274	8.4	0.46	15.89	-122	0.1	
1300	2.90		6.53	0.268	6.8	0.42	16.01	-119	0.1	
1305	2.90	275	6.50	0.266	4.7	0.41	16.04	-117	0.1	
1310	2.89		6.48	0.264	4.5	0.40	16.04	-116	0.1	
1315	2.88		6.49	0.261	4.2	0.40	16.06	-114	0.1	
1324										Begin Sampling Sampling complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MR
Project No.:

Sample ID No.: MRC-MW63A 062515
Sample Location: MW63A
Sampled By: SB
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-25-15 / Time: 1335 / Method: Peri Pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	5.84	2.35	20.31	2.7	0.18	1.2	34

PURGE DATA:

Date: 6-25-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump			See Low Flow Purge Data Sheet					
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 13.47								
Static Water Level (WL): 2.97								
One Casing Volume(gal/L):								
Start Purge (hrs): 1240								
End Purge (hrs): 1350								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 3 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 ml vials	✓
1,4-Dioxane	None	2-250 ml Ambers	✓
Total Metals	HNO_3	1-500 ml plastic	✓

OBSERVATIONS / NOTES:

QA (If Applicable):

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:
WELL ID.: MRC-MW63A-062515
DATE: 6-25-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1240	2.97	-	-	-	-	-	-	-	-	
1245	3.75	300	5.25	2.57	707	0.27	22.50	48	1.3	
1250	3.92	200	5.16	2.61	384	0.03	21.62	53	1.3	
1255	3.96	200	5.09	2.69	114	0.00	20.81	61	1.4	
1300	4.02	200	5.03	2.75	85.9	0.00	20.45	67	1.4	
1305	4.08	200	5.06	2.75	44.8	0.00	20.36	68	1.4	
1310	4.13	200	5.06	2.74	39.4	0.00	20.19	65	1.4	
1315	4.35	200	5.09	2.72	30.7	0.00	20.29	56	1.4	
1320	4.36	200	5.21	2.56	30.2	0.00	20.25	43	1.4	
1325	4.47	200	5.30	2.43	21.1	0.19	20.31	40	1.2	
1330	4.51	200	5.33	2.37	11.1	0.20	20.14	38	1.2	
1335	4.62	200	5.34	2.35	2.9	0.18	20.31	34	1.2	
Sampling										

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112I06247

Sample ID No.: MRC-MW-67A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

SAMPLING DATA:

Date: 5/5/15 Time: 1045	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: peri pump	clear	7.21	5.04	21.60	10.68	0.13	2.7	372

PURGE DATA:

Date: 5/5/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC		SEE Low Flow PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 19.18								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0950								
End Purge (hrs): 1045								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112I06247
WELL ID.: MRC-MW-67A
DATE: 5/5/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0950	19.18	—	—	—	—	—	—	—	—	
0955	19.90	200	3.12	4.82	57.3	0.88	21.94	373	2.6	
1000	20.56	200	3.14	4.97	26.4	0.35	21.42	347	2.7	
1005	20.98	200	3.15	5.01	14.8	0.28	21.38	355	2.7	
1010	21.41	200	3.16	5.03	11.1	0.25	21.37	364	2.7	
1015	21.41	200	3.17	5.02	12.25	0.23	21.38	365	2.7	
1020	21.43	200	3.20	5.02	14.46	0.20	21.46	357	2.7	
1025	21.53	200	3.19	5.03	11.0	0.18	21.41	368	2.7	
1030	21.70	200	3.20	5.02	11.95	0.17	21.48	371	2.7	
1035	21.68	200	3.20	5.04	11.43	0.15	21.40	372	2.7	
1040	22.00	200	3.21	5.04	11.0	0.14	21.65	372	2.7	
1045	~~FB~~ 22.08	200	3.21	5.04	10.68	0.13	21.60	372	2.7	
	Sample Total metals @ 1045									

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-68A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/5/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0920	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Pump	clear	380	3.26	18.75	8.60	0.61	1.7	276

PURGE DATA:

Date: 5/5/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material		SEE LOW FLOW PURGE DATA SHEET						
Type: 2" PVC								
Total Well Depth (TD): 3790								
Static Water Level (WL): 12'								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0820								
End Purge (hrs): 0920								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals	HNO3	1-500mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-68A
DATE: 5/5/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0820	12.0'	-	-	-	-	-	-	-	-	
0825	12.78'	200	4.16	3.11	18.8	3.82	20.16	247	1.6	
0830	13.38'	200	4.01	3.15	12.69	2.76	19.46	259	1.6	
0835	14.05	200	3.86	3.16	9.75	2.26	18.25	268	1.7	
0840	14.70	200	3.80	3.19	10.07	2.03	18.93	273	1.7	
0845	15.38	200	3.80	3.19	9.62	1.84	18.87	275	1.7	
0850	16.06	200	3.78	3.20	9.29	1.70	18.81	278	1.7	
0855	16.71	200	3.86	3.23	~~10.46~~ 9.37	1.75	18.76	260	1.7	
0900	17.38	200	3.79	3.24	10.05	1.46	18.67	266	1.7	
0905	18.05	200	3.79	3.24	8.94	1.01	18.67	270	1.7	
0910	18.58	200	3.79	3.25	9.01	0.83	18.67	273	1.7	
0915	18.78	200	3.79	3.25	9.29	0.71	18.72	275	1.7	
0920	18.88	200	3.80	3.26	8.60	0.61	18.78	276	1.7	
	Sample Total Metals @ 0920									

SIGNATURE(S): _____

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Complex
Project No.: 112IC06247

Sample ID No.: MRC-MW-69A-050515
Sample Location: MW-69A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-5-15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1044	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Peristaltic pump	Clear	6.55	2.89	17.05	0.0	0.00	1.5	-64

PURGE DATA:

Date: 5-5-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See	low	flow	purge			
Total Well Depth (TD):			Data	Sheet				
Static Water Level (WL): 9.71								
One Casing Volume(gal/L):								
Start Purge (hrs): 0957								
End Purge (hrs): 1043								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	Na2SO4	2 - 500 ml Amber	✓
Perchlorate	—	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-69A-050515
DATE: 5-5-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0957	9.71	—	—	—	—	—	—	—	—	Initial, no odor
0958	9.95	300	6.46	2.69	60.6	1.22	16.00	31	1.4	Slightly Cloudy
1003	10.16	300	6.71	2.78	22.4	0.30	15.65	-43	1.4	
1008	10.31	150	6.72	2.91	11.8	0.22	15.93	-51	1.5	
1018	10.60	100	6.66	2.89	1.7	0.11	16.00	-69	1.5	Clear Water
1028	10.94	100	6.58	2.92	0.0	0.04	16.38	-69	1.5	
1033	11.05	100	6.56	2.92	0.0	0.01	16.79	-66	1.5	
1038	11.10	100	6.55	2.90	0.0	0.00	17.00	-65	1.5	
1043	11.15	100	6.55	2.89	0.0	0.00	17.05	-64	1.5	

Well Parameters Stabilize

Sampling Begins

SIGNATURE(S): Walt P

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112SC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-69B-050515
Sample Location: MW-69B
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-5-15 / Time: 1247	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other orp
Method: Peristaltic pump	Clear	5.21	0.538	19.07	0.0	1.38	0.3	272

PURGE DATA:

Date: 5-5-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 10.60								
One Casing Volume(gal/L):								
Start Purge (hrs): 1111								
End Purge (hrs): 1242								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
~~Total~~ 1,4 Dioxane	NaHSO4	2 - 500 ml Ambers	✓
Perchlorate	✓	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Walt Re

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-69B-0505B
DATE: 5-5-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1111	10.60	—	—	—	—	—	—	—	—	Initial, no odor Clean Water
1112	11.37	300	5.81	0.625	0.0	1.18	18.96	61	0.3	
1117	12.20	100	5.34	0.592	0.0	0.61	18.17	172	0.3	
1122	13.05	100	5.15	0.565	0.0	0.96	18.21	198	0.3	
1132	14.90	100	5.16	0.544	0.0	1.61	17.92	238	0.3	
1142	16.50	100	5.19	0.541	0.0	1.63	18.11	249	0.3	
1152	18.20	100	5.19	0.542	0.0	1.56	18.26	266	0.3	
1202	19.87	100	5.19	0.542	0.0	1.48	18.57	263	0.3	
1212	21.60	100	5.20	0.541	0.0	1.45	18.77	265	0.3	
1222	23.00	100	5.20	0.538	0.0	1.40	18.96	267	0.3	
1232	24.50	100	5.21	0.541	0.0	1.31	19.01	269	0.3	
1242	25.40	100	5.21	0.538	0.0	1.38	19.07	272	0.3	

Well parameters did not stabilize after 90 min max purge per work plan Sampling Begins

SIGNATURE(S): Walt Pa

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-70A-062515
Sample Location: 6/25/15 MRC-MW-70A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/25/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1225								
Method: Low Flow	blackish brown	6.65	2.68	21.21	44.7	0.14	1.4	-177

PURGE DATA:

Date: 6/25/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri-pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):			See Purge Data Sheet					
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1120								
End Purge (hrs): 1225								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40 mL VOAs	3
Total Metals	HNO_3	1x500mL poly	1
1,4 dioxane	None	2x250mL ambers	2

OBSERVATIONS / NOTES:

QA: If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-70A-062515
DATE: 6/25/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1120	1.66									Begin Purging
1130	1.92	160	6.53	2.70	990	1.13	23.77	-147	1.4	
1140	2.22		6.59	2.71	716	1.01	22.75	-158	1.4	
1150	2.45	180	6.61	2.71	460	0.87	22.51	-165	1.4	
1158	2.59		6.62	2.70	350	0.75	22.33	-168	1.4	
1204	2.67	180	6.63	2.68	295	0.65	22.08	-170	1.4	
1210	2.73		6.68	2.68	58.1	0.21	21.91	-171	1.4	
1215	2.79	180	6.65	2.67	50.0	0.13	21.61	-171	1.4	
1220	2.84		6.65	2.67	45.2	0.13	21.38	-172	1.4	
1225	2.88		6.65	2.68	44.7	0.14	21.21	-172	1.4	Begin Sampling
1235										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-70B-062515
Sample Location: MRC-MW-70B
Sampled By: FG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/25/15 Time: 1345 Method: Low flow	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	White/tan	7.58	0.360	16.56	56.9	0.32	0.2	-201

PURGE DATA:

Date: 6/25/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri-pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):			See	Purge	Data	Sheet		
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1245								
End Purge (hrs): 1345								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 2 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40mL VOAs	3
1,4 dioxane	None	2x250mL ambers	2

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-70B-062515
DATE: 6/25/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1245	2.60									Begin Purging
1255	3.02	170	7.30	0.376	71.2	1.07	21.23	-146	0 2	
1305	3.52		7.42	0.361	57.9	1.01	20.18	-176	0.2	
1315	3.68	180	7.47	0.361	47.4	0.94	19.56	-185	0.2	
1325	3.75		7.51	0.361	54.0	0.26	19.84	-193	0.2	
1333	3.80	190	7.55	0.360	57.3	0.30	19.62	-197	0.2	
1340	3.79		7.57	0.360	56.3	0.32	19.56	-200	0.2	
1345	3.79		7.58	0.360	56.9	0.32	19.56	-201	0.2	Begin Sampling
1352										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-71A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[✓] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 9/16/15								
Time: 1110								DRP
Method: peri pump	cloudy	6.93	0.492	13.68	100.2	5.28	0.2	173

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/16/15								
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): —		SEE LOW FLOW PURGE DATA SHEET						
Static Water Level (WL): 1.34								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0940								
End Purge (hrs): 1110								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): ~5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
Total Metals	HNO3	1-500 mL plastic	✓
1-4 dioxane	Na2SO4	1-500 mL amber	✓

OBSERVATIONS / NOTES:

~~[illegible]~~ * 90 min purge time limit reached

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: ~~MW~~ MRC GW 2015
PROJECT NUMBER: 112IL06247

WELL ID.: MRC-MW-71A
DATE: 4/16/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0940	1.34	—	—	—	—	—	—	—	—	
0945	2.36	300	8.09	0.609	39.8	7.86	12.72	111	0.3	
0950	2.47	300	8.11	0.611	37.6	7.69	12.74	111	0.3	
0955	2.78	300	8.12	0.609	24.2	7.55	12.69	112	0.3	
1000	3.00	300	8.03	0.602	20.2	7.19	12.76	113	0.3	
1005	3.29	300	7.75	0.586	11.6	6.57	12.89	122	0.3	
1010	3.49	300	7.59	0.569	12.0	6.20	12.89	127	0.3	
1015	3.72	300	7.39	0.543	11.1	5.67	12.87	135	0.3	
1020	3.91	300	7.25	0.525	11.5	5.39	13.05	139	0.3	
1025	4.05	300	7.18	0.513	11.6	5.17	13.06	141	0.2	
1030	4.18	300	7.11	0.500	15.4	4.86	13.14	145	0.2	
1035	4.78	300	6.99	0.484	20.2	4.84	13.16	149	0.2	
1040	5.03	300	6.86	0.477	46.9	4.32	13.24	156	0.2	
1045	5.83	300	6.76	0.478	120	4.54	13.38	165	0.2	
1050	6.18	300	6.74	0.479	158	5.03	13.44	171	0.2	
1055	6.18	300	6.72	0.479	59	5.30	13.54	174	0.2	
1100	6.18	300	6.76	0.482	135	5.35	13.64	175	0.2	
1105	6.20	300	6.91	0.490	109.5	5.27	13.67	172	0.2	
1110	6.20	300	6.93	0.492	100.2	5.28	13.68	173	0.2	
	Sample VOCs, 1-4 dioxane, Total metals				(90 min purge time limit)					

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112-IC06247

Sample ID No.: MRC-MW-71B
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/16/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1410	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: perl pump	Clear	5.69	0.450	16.68	6.54	1.77	0.2	97

PURGE DATA:

Date: 4/16/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: perl pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): -		SEE GW FIELD PURGE DATA SHEET						
Static Water Level (WL): 0.50								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1315								
End Purge (hrs): 1410								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL VIALS	✓
1,4 dioxane	H_2SO_4	1-500 mL amber	✓
Total Metals	HNO_3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

MRL-MW-DUP01-041615

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

DUP-01

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-71B-041615
DATE: 4/16/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1315	0.5	—	—	—	—	—	—	—	—	
1320	1.38	300	6.10	0.373	49.2	3.85	17.01	125	0.2	
1325	2.35	300	6.07	0.381	27.8	3.57	16.56	141	0.2	
1330	3.09	300	6.04	0.381	21.3	3.38	16.51	142	0.2	
1335	3.72	300	5.99	0.383	17.1	3.11	16.51	116	0.2	
1340	4.25	300	5.96	0.384	12.9	2.90	16.54	98	0.2	
1345	4.72	300	5.86	0.389	11.97	2.48	16.49	92	0.2	
1350	5.05	300	5.81	0.393	9.00	2.28	16.53	94	0.2	
1355	5.31	300	5.79	0.397	9.08	2.01	16.65	94	0.2	
1400	5.63	300	5.73	0.402	7.78	1.79	16.66	92	0.2	
1405	5.78	300	5.71	0.401	6.96	1.78	16.66	96	0.2	
1410	5.83	300	5.69	0.402	6.54	1.77	16.68	97	0.2	
		Sample VOCs, 1-4 dioxane, Total Hg-15 @ 1410								
				MRC-MW-DUP01-041615						

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-72B-04/15/15
Sample Location: MRC-MW-72B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/15/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1245	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	clear	6.21	0.116	14.88	11.0	2.67	0.1	179

PURGE DATA:

Date: 4/15/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1138								
End Purge (hrs): 1245								
Total Purge Time (min): 67								
Total Vol. Purged (gal/L): 4.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620C)	HCl	3x40mL glass	3
E104	None	1x250mL Plastic	1
Alkalinity	None	1x250mL Plastic	1
Cl, NO_2, NO_3, SO_4, OPO_4	None	1x250mL Plastic	1
NH_3	H_2SO_4	1x250mL Plastic	1
RSK-175	HCl	3x40mL glass	3
TOC	H_2SO_4	1x250mL amber	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-72B-041515
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1138	5.63									Begin Purging
1148	6.63	200	7.09	0.118	57.6	4.70	14.52	136	0.1	
1156	6.79		6.81	0.110	42.2	4.25	14.44	147	0.1	
1203	6.88	220	6.66	0.109	30.3	3.80	14.53	153	0.1	
1209	6.92		6.53	0.111	21.9	3.52	14.58	159	0.1	
1215	6.98	240	6.47	0.112	19.3	3.28	14.62	163	0.1	
1220	6.99		6.42	0.113	18.4	3.03	14.71	166	0.1	
1225	7.03	240	6.36	0.115	14.4	2.94	14.76	169	0.1	
1230	7.18		6.30	0.117	15.3	2.80	14.78	172	0.1	
1235	7.16	250	6.26	0.117	14.5	2.71	14.92	174	0.1	
1240	7.15		6.23	0.115	13.2	2.72	14.90	177	0.1	
1245	7.16		6.21	0.116	11.0	2.67	14.88	179	0.1	Begin Sampling
1256										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

Sample ID No.: MRC-MW-73B-04157S
Sample Location: MRC-MW-73B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/15/15	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Time: 1415				15.07				
Method: Low Flow	clear	4.64	0107	~~14.98~~	9.9	1.43	0.1	265

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/15/15								
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1315								
End Purge (hrs): 1415								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 4gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620C)	HCl	3 x 40mL glass	3

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-73B-041515
DATE: 4/15/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1315	6.75									Begin purging
1325	7.44	270	4.63	0.143	14.0	2.42	14.66	235	0.1	
1334	7.45		4.60	0.132	18.1	1.95	14.76	253	0.1	
1342	7.51	300	4.60	0.125	12.9	1.79	14.80	260	0.1	
1349	7.52		4.62	0.118	12.9	1.72	14.90	264	0.1	
1355	7.57	330	4.63	0.114	12.5	1.60	14.92	267	0.1	
1400	7.57		4.68	0.112	11.0	1.58	15.01	254	0.1	
1405	7.58	330	4.65	0.110	11.1	1.56	15.00	257	0.1	
1410	7.57		4.65	0.109	10.7	1.43	14.99	261	0.1	
1415	7.57		4.64	0.107	9.9	1.43	15.07	265	0.1	Begin Sampling
1417										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle Raven Center
Project No.: 112EC06247

Sample ID No.: MRC-MW-74A-051115
Sample Location: MW-74A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-11-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1512								
Method: Peristaltic pump	Clear	5.93	0.525	17.56	0.0	1.64	0.3	260

PURGE DATA:

Date: 5-11-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 4" PVC								
Total Well Depth (TD):			See low flow purge Data Sheet					
Static Water Level (WL): 7.65								
One Casing Volume(gal/L):								
Start Purge (hrs): 1421								
End Purge (hrs): 1507								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Perchlorate	—	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD —
Duplicate ID No.: —

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-74A-051116
DATE: 5-11-16

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1421	7.65	—	—	—	—	—	—	—	—	Initial, no odor
1422	7.85	300	5.86	0.511	1.1	2.75	19.12	292	0.2	Clear water
1427	8.00	300	5.87	0.526	0.0	1.88	18.55	276	0.2	
1432	8.05	200	5.88	0.520	0.0	1.71	19.07	264	0.3	
1442	8.11	100	5.93	0.516	0.0	1.72	19.54	258	0.2	
1452	8.16	100	5.94	0.521	0.0	1.65	18.72	254	0.3	
1457	8.20	100	5.94	0.520	0.0	1.64	18.36	257	0.3	
1502	8.21	100	5.93	0.523	0.0	1.65	17.56	254	0.3	
1507	8.22	100	5.93	0.525	0.0	1.64	17.56	260	0.3	
				Well parameters stabilized						
				Sampling Begins						

SIGNATURE(S): WMR

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117IC06247

Sample ID No.: MRC-MW-74B
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[ ] High Concentration

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1305								
Method: low flow	clear	5.94	0.146	16.78	23.4	1.98	0.1	100

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 4" PVC								
Total Well Depth (TD): ~33'		SEE Low Flow PURGE DATA SHEET						
Static Water Level (WL): 9.80								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1210								
End Purge (hrs): 1305								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): ~2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
Perchlorate	-	1-125 mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-74B
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1210	9.80	–	–	–	–	–	–	–	–	
1215	10.05	200	5.66	0.177	OVR	2.55	17.33	32	0.1	
1220	10.20	200	5.53	0.157	142.5	2.38	17.13	49	0.1	
1225	10.40	200	5.51	0.151	77.4	2.29	16.69	63	0.1	
1230	10.45	200	5.45	0.150	52.1	2.20	16.64	71	0.1	
1235	10.69	200	5.49	0.148	42.2	2.44	16.60	77	0.1	
1240	10.95	200	5.42	0.147	38.7	2.11	16.61	87	0.1	
1245	11.07	200	5.40	0.147	28.5	2.07	16.76	92	0.1	
1250	11.15	200	5.46	0.146	27.1	2.02	17.13	92	0.1	
1255	11.21	200	5.44	0.146	26.1	2.01	17.21	96	0.1	
1300	11.30	200	5.46	0.146	25.6	1.98	16.75	99	0.1	
1305	11.35	200	5.44	0.146	23.4	1.98	16.78	100	0.1	
		Sample	VOCs+	Perch	@ 1305					

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-76A-042315
Sample Location: MRC-MW-76A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/23/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1310								
Method: Low Flow	clear	5.39	0.981	13.94	7.5	0.73	0.5	19

PURGE DATA:

Date: 4/23/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1220								
End Purge (hrs): 1310								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8620)	HCl	3 x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1 x 500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-76A-042315
DATE: 4/23/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1220	10.05									Begin Purging
1230	11.28	280	5.58	0.970	10.4	0.95	14.12	6	0.5	
1239	11.92		5.64	0.944	4.3	0.86	13.91	-8	0.5	
1247	11.85	270	5.57	0.991	4.8	0.82	13.91	-2	0.5	
1254	12.01	280	5.50	0.986	9.1	0.78	13.89	-8	0.5	
1300	12.12		5.44	0.983	7.8	0.76	13.96	14	0.5	
1305	12.20	300	5.41	0.981	7.4	0.74	14.02	17	0.5	
1310	12.24		5.39	0.981	7.5	0.73	13.94	19	0.5	Begin Sampling
1316										Sampling complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-76B-042315
Sample Location: MRC-MW-76B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/23/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1205								
Method: Low Flow	clear	5.45	0.535	16.16	19.1	0.88	0.3	48

PURGE DATA:

Date: 4/23/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1100								
End Purge (hrs): 1205								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs 8260	HCl	3x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-76B-042315
DATE: 4/23/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1100	9.62									Begin purging
1110	10.92	230	5.38	0.527	1904AV	1.78	16.26	23	0.3	
1119	11.20		5.20	0.526	39	1.44	16.15	68	0.3	
1127	11.28	280	5.27	0.520	117	1.23	16.16	71	0.3	
1134	11.41		5.30	0.518	75.8	1.13	16.03	65	0.2	
1140	11.51	280	5.32	0.518	48.5	1.01	16.13	62	0.2	
1145	11.54		5.39	0.520	38.5	0.97	16.04	56	0.2	
1150	11.58	280	5.38	0.522	31.8	0.92	16.10	55	0.3	
1155	11.61		5.43	0.528	25.5	0.89	16.13	52	0.3	
1200	11.63	280	5.44	0.531	22.3	0.91	16.13	48	0.3	
1205	11.63		5.45	0.535	19.1	0.88	16.16	48	0.3	Begin Sampling
1211										Sampling Complete

SIGNATURE(S):

* SAMPLE ID HAS "B" INSTEAD of "A"

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112EC06247

Sample ID No.: MRC-MW-77B-0421 15 *
Sample Location: MW-77B A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-21-15 / Time: 1059	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	5.27	2.67	14.57	3.80	0.00	1.4	94

PURGE DATA:

Date: 4-21-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge						
Total Well Depth (TD):								
Static Water Level (WL): 5.55		Data	Sheet					
One Casing Volume(gal/L):								
Start Purge (hrs): 0957								
End Purge (hrs): 1053								
Total Purge Time (min): 56								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt R

LOW FLOW PURGE DATA SHEET

MRC-MW77A

PROJECT SITE NAME: Middle River center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-77B-042115
DATE: 4-21-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0957	5.55	—	—	—	—	—	—	—	—	Initial, no odor
0958	6.05	300	5.45	2.13	62.5	1.35	14.36	44	1.1	Slightly cloudy
1003	6.20	200	5.43	2.12	42.3	0.32	14.07	37	1.1	
1008	6.15	200	5.44	2.15	25.9	0.13	14.00	38	1.1	
1018	6.15	200	5.41	2.31	12.7	0.01	14.08	50	1.2	
1028	6.15	200	5.37	2.48	8.35	0.00	14.20	66	1.3	Clear water
1033	6.15	200	5.36	2.52	5.00	0.00	14.27	70	1.3	
1038	6.15	200	5.34	2.54	4.65	0.00	14.36	78	1.3	
1043	6.15	200	5.29	2.65	4.00	0.00	14.47	85	1.4	
1048	6.15	200	5.29	2.65	3.99	0.00	14.55	92	1.4	
1053	6.15	200	5.27	2.67	3.80	0.00	14.57	94	1.4	

Well Parameter Stabilize

Sampling Begins

SIGNATURE(S): [signature]

PAGE 2 OF 2

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-78B-04 2315
Sample Location: MRC-MW-78B
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/23/15 Time:	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	7.96	6.32	14.86	6.6	1.06	4.3	-240

PURGE DATA:

Date: 4/23/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0815								
End Purge (hrs): 0915								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 3gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-78B-042315
DATE: 4/23/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0815	2.05									Begin Purging
0825	5.89	260	7.11	6.16	25.8	2.22	15.22	-135	3.3	
0834	7.98		7.58	6.19	12.4	1.69	14.99	-187	3.4	
0843	10.62	230	7.84	6.23	9.66	1.33	14.90	-220	3.4	
0851	11.77		7.96	6.25	7.3	1.30	14.93	-230	3.4	
0858	12.98	200	7.96	6.28	6.1	1.15	14.88	-235	3.4	
0904	13.80		7.99	6.30	7.8	1.11	14.90	-238	3.4	
0910	14.73	200	7.96	6.32	6.6	1.06	14.86	-240	3.4	
0915										Begin Sampling
0921										Sampling Complete

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Meddle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-79B-042115
Sample Location: MW-79B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-21-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1523								
Method: Peristaltic pump	Slight	5.63	1.19	16.10	118	0.32	0.6	66

PURGE DATA:

Date: 4-21-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 9.80								
One Casing Volume(gal/L):								
Start Purge (hrs): 1352								
End Purge (hrs): 1523								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 5.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3- 40 ml VOA	✓
Total metals	HNO3	1- 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pugh

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-79B-042115
DATE: 4-21-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1352	8.80	—	—	—	—	—	—	—	—	Initial, no odor
1353	9.80	300	5.31	0.609	15.6	4.38	15.52	167	0.3	Slightly Cloudy
1358	10.60	200	5.49	0.463	12.8	4.38	15.24	190	0.2	↓
1403	11.40	100	5.48	0.507	8.88	3.61	15.19	157	0.2	Clear water
1413	12.25	100	5.48	0.644	20.6	2.41	15.86	130	0.3	▽
1423	12.60	100	5.52	0.767	57.9	1.48	15.60	108	0.4	Slightly cloudy
1433	12.80	100	5.55	0.888	71.5	1.06	15.78	94	0.4	
1443	13.00	100	5.57	0.999	79.7	0.76	15.81	83	0.5	
1453	13.25	100	5.60	1.08	91.4	0.62	15.80	77	0.5	
1503	13.40	100	5.61	1.14	103.4	0.44	15.84	72	0.6	
1513	13.45	100	5.62	1.18	112	0.40	16.01	68	0.6	
1523	13.50	100	5.63	1.19	118	0.32	16.00	66	0.6	

Well parameters did not stabilize

Sample after 90 min of max purge per work plan Sampling Begins

SIGNATURE(S): Walt B

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 102EC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-80A-042915
Sample Location: MW-80A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-29-15 / Time: 1100	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	6.43	0.653	16.33	0.0	4.37	0.3	210

PURGE DATA:

Date: 4-29-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See	Low	Flow	Purge			
Total Well Depth (TD):				Data	Sheet			
Static Water Level (WL): 5.40								
One Casing Volume(gal/L):								
Start Purge (hrs): 0924								
End Purge (hrs): 1055								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1,4 Dioxane	H_2SO_4	2 - 500 ml Ambers	✓
Total Metals	HNO_3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-80A-042915
DATE: 4-29-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0924	5.40	—	—	—	—	—	—	-	—	Initial, no odor
0925	5.60	300	6.01	0.934	147	7.98	14.92	209	0.5	Cloudy Water
0930	5.80	200	6.34	0.925	34	3.54	14.62	197	0.5	
0935	5.91	100	6.37	0.928	21.9	3.39	14.40	197	0.5	
0945	6.20	100	6.41	0.938	0.0	3.47	14.14	196	0.5	Clear Water
0955	6.45	100	6.43	0.894	0.0	4.50	13.85	200	0.4	
1000	6.55	100	6.43	0.827	0.0	5.06	13.53	202	0.4	
1005	6.77	100	6.43	0.684	0.0	5.85	13.41	208	0.4	
1015	6.99	100	6.44	0.600	0.0	5.94	14.70	210	0.3	
1025	7.40	100	6.45	0.581	0.0	5.30	15.86	212	0.3	
1035	7.57	100	6.45	0.588	0.0	5.07	16.06	212	0.3	
1045	7.85	100	6.43	0.621	0.0	4.79	15.97	211	0.3	
1055	8.02	100	6.43	0.653	0.0	4.37	16.33	210	0.3	

Well parameter did not stabilize
after 90 min of max purge pure
Work plan Sampling Begins

SIGNATURE(S): Walt Pr

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112SC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-80B-042915
Sample Location: MW-80B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-29-15								
Time: 1249	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Peristaltic pump	Clear	5.41	0.248	19.06	0.0	1.42	0.1	172

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-29-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See	low	flow	purge		
Total Well Depth (TD):								
Static Water Level (WL): 7.21			Data	Sheet				
One Casing Volume(gal/L):								
Start Purge (hrs): 1113								
End Purge (hrs): 1244								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
1,4 Dioxane	Natrosol	2 - 500 ml Ambers	—

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: K2ICO6247
WELL ID.: MRC-MW-80B-042915
DATE: 4-29-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1113	7.21	—	—	—	—	—	—	—	—	Initial, no odor
1114	8.15	300	6.01	0.279	42.5	2.79	17.89	167	0.1	Slighty cloudy
1119	8.81	100	5.94	0.270	40.6	2.22	17.15	181	0.1	
1124	10.00	100	5.84	0.262	24.5	1.86	17.83	202	0.1	
1134	11.60	100	5.80	0.259	7.1	1.74	17.22	204	0.1	Clean water
1144	13.70	100	5.80	0.254	1.4	1.60	17.83	198	0.1	
1154	15.55	100	5.78	0.252	0.0	1.49	17.78	192	0.1	
1204	17.10	100	5.80	0.253	0.0	1.45	17.84	187	0.1	
1214	18.70	100	5.81	0.251	0.0	1.46	18.50	184	0.1	
1224	20.40	100	5.76	0.251	0.0	1.35	18.26	171	0.1	
1234	22.60	100	5.83	0.254	0.0	1.41	18.19	167	0.1	
1244	24.42	100	5.81	0.248	0.0	1.42	19.06	172	0.1	

Well parameter did not stabilize
after 90 min of max purge pump
Work plan Sampling Begin

SIGNATURE(S): Walt B

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06~~347~~247

Sample ID No.: MRC-MW-81A-042215
Sample Location: MRC-MW-81A
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/22/2015 Time: 1212	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	6.31	1.16	15.75	5.6	1.65	0.6	-118

PURGE DATA:

Date: 4/22/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1124								
End Purge (hrs): 1212								
Total Purge Time (min): 48								
Total Vol. Purged (gal/L): 3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals (Hg)	Nitric Acid	1x 500ML plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-81A-042215
DATE: 4/22/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
~~1124~~	9.14									Begin purging
1134	10.03	330	6.36	1.09	12.2	1.90	15.86	-125	0.5	
1143	10.29		6.38	1.13	7.0	1.64	15.71	-132	0.6	
1151	10.41	370	6.38	1.14	6.9	1.64	15.71	-130	0.6	
1158	10.48		6.39	1.17	6.4	1.56	15.74	-125	0.6	
1204	10.53	340	6.34	1.17	4.9	1.63	15.75	-121	0.6	
1210	10.57		6.31	1.16	5.6	1.65	15.75	-118	0.6	Begin sampling
1212										Sampling complete

SIGNATURE(S):

PAGE 1 OF 1

metals

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-81B-042215
Sample Location: MRC-MW-81B
Sampled By: TG
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/22/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1350								ORP
Method: Low flow	clear	6.52	0.944	17.79	18.9	0.45	0.5	-122

PURGE DATA:

Date: 4/22/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1238								
End Purge (hrs): 1350								
Total Purge Time (min): 72								
Total Vol. Purged (gal/L): 4.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL plastic	1
RSK-175	HCl	3x 40mL glass	3
Alkalinity	None	1x 250mL plastic	1
TOC's	H_2SO_4	1x 250 mL amber	1
NH_3	H_2SO_4	1x 250 mL plastic	1
Cl, NO_2, NO_3, SO_4, OPO_4...	None	1x 250 mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-~~80~~ TO 81B-042215
DATE: 4/22/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1238	7.53									Begin Purging
1248	8.71	300	6.63	0.958	437	1.70	18.62	-136	0.5	
1257	9.93		6.67	0.948	1515	1.17	18.45	-146	0.5	
1305	10.02	200	6.68	0.949	1121	1.14	18.66	-145	0.5	
1312	10.15		6.68	0.949	201	0.52	18.42	-145	0.5	
1319	10.20	210	6.67	0.948	62.8	0.42	18.24	-143	0.5	
1326	10.27		6.65	0.947	43.8	0.39	17.94	-141	0.5	
1 1333	10.41	240	6.62	0.948	29.3	0.39	17.89	-136	0.5	
2 1339	10.43		6.58	0.949	23.6	0.42	17.82	-131	0.5	
3 1345	10.47	240	6.54	0.947	21.5	0.44	17.80	-125	0.5	
1350	10.49		6.52	0.944	18.9	0.45	17.79	-122	0.5	Begin Sampling
1407										Sampling Complete

SIGNATURE(S):

2

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 117-EC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-87A
Sample Location: MRC
Sampled By: SAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/13/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1120								ORP
Method: Low Flow	Clear	5.86	3.53	18.12	18.4	1.13	1.9	-43

PURGE DATA:

Date: 5/13/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC	SEE Low Flow PURGE DATA SHEET							
Total Well Depth (TD): 14'								
Static Water Level (WL): 11.75								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1050								
End Purge (hrs): 1120								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): ~1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL VOCs	✓

OBSERVATIONS / NOTES:

DUP-06 for VOCs

Circle if Applicable:
MS/MSD
Duplicate ID No.: MRC-MW-DUP06-051315

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06287
WELL ID.: MRC-MW-87A
DATE: 5/13/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1050	11.75	–	–	–	–	–	–	–	–	
1055	12.11	100	5.69	3.36	69.1	1.63	19.95	7	1.8	
1100	12.44	100	5.65	3.44	52.0	1.34	18.80	-34	1.8	
1105	12.85	100	5.86	3.53	33.3	1.21	18.33	-39	1.9	
1110	13.30	100	5.85	3.53	23.1	1.15	18.15	-41	1.8	
1115	13.45	100	5.86	3.53	20.7	1.12	18.13	-42	1.9	
1120	13.55	100	5.86	3.53	18.4	1.13	18.12	-43	1.9	
	Sample VOCs @ 1120									
	MRC-MW-DUP0[illegible]-05131[illegible]									

SIGNATURE(S): [signature]

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Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-97B-042215
Sample Location: MW-97B
Sampled By: WR
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-22-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1020								
Method: Peristaltic pump	Clear	7.72	1.39	18.34	0.0	0.02	0.7	-111

PURGE DATA:

Date: 4-22-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC				See low flow purge data sheet				
Total Well Depth (TD):								
Static Water Level (WL): 11.40								
One Casing Volume(gal/L):								
Start Purge (hrs): 0844								
End Purge (hrs): 1015								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s):

Walt Pau

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112EC06247

WELL ID.: MRC-MW-87B-042215
DATE: 4-22-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0844	11.40	—	—	—	—	—	—	—	—	Initial, no odor
0845	12.17	300	6.65	1.49	312	2.04	16.56	21	0.8	Cloudy water
0850	13.65	250	7.07	1.52	119	0.87	16.63	-65	0.8	
0855	14.81	100	7.40	1.43	51.2	0.53	16.66	-100	0.7	
0905	17.80	100	7.64	1.33	0.0	0.15	16.84	-52	0.7	
0915	19.40	100	7.62	1.33	0.0	0.30	16.50	-62	0.7	
0925	20.65	100	7.66	1.33	0.0	0.21	16.82	-73	0.7	
0935	22.17	100	7.66	1.33	0.0	0.04	17.23	-85	0.7	
0945	23.75	100	7.67	1.33	0.0	0.05	17.38	-93	0.7	
0955	24.60	100	7.67	1.34	0.0	0.21	17.34	-96	0.7	
1005	24.70	100	7.69	1.36	0.0	0.06	17.87	-100	0.7	
1015	25.30	100	7.72	1.39	0.0	0.02	18.34	-111	0.7	

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112FC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-88B-042915
Sample Location: MW-88B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-29-15 / Time: 1451	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	5.85	0.040	19.12	8.0	1.80	0.0	201

PURGE DATA:

Date: 4-29-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See Low flow purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 3.80								
One Casing Volume(gal/L):								
Start Purge (hrs): 1400								
End Purge (hrs): 1446								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 mL VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pz

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-88B-042915
DATE: 4-29-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1400	3.80	—	—	—	—	—	—	—	—	Initial, no flow
1401	4.23	300	6.15	0.070	0.0	4.65	23.72	223	0.0	clear water
1406	4.15	280	6.19	0.079	0.0	4.38	23.15	221	0.0	
1411	4.15	280	6.20	0.093	0.0	4.50	20.33	221	0.0	
1421	4.15	280	6.17	0.094	0.0	4.04	19.84	226	0.0	
1431	4.15	280	5.95	0.089	0.0	2.20	19.48	230	0.0	
1436	4.15	280	5.88	0.082	0.0	1.80	19.20	211	0.0	
1441	4.15	280	5.85	0.081	0.0	1.85	19.03	206	0.0	
1446	4.15	280	5.85	0.080	0.0	1.80	19.12	201	0.0	
			Well parameter Stabilized							
			Sampling Begin							

SIGNATURE(S): WAW R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRL-MW-88B
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/1/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1020								
Method: peri pump	clear	5.33	0.064	16.37	1.25	1.54	0.0	223

PURGE DATA:

Date: 5/1/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE	LOW	FLOW	PURGE	DATA	SHEET	
Total Well Depth (TD): —								
Static Water Level (WL): 3.88								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0935								
End Purge (hrs): 1020								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 ml vials (glass)	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015
PROJECT NUMBER: 112806749

WELL ID.: MRL-MW-88B
DATE: 5/11/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
~~0935~~	3.88	-	-	-	~~4.06~~	-	-	-	-	
0940	4.24	200	~~200~~ 5.91	~~5.91~~ 0.156	~~0.156~~	3.54	15.62	196	0.1	
0945	4.25	200	5.79	0.133	3.20	2.86	15.68	210	0.1	
0950	4.25	200	5.75	0.110	2.14	2.54	15.87	218	0.1	
0955	4.25	200	5.67	0.098	1.80	2.34	16.03	227	0.0	
1000	4.25	200	5.51	0.085	1.00	2.16	16.11	232	0.0	
1005	4.25	200	5.38	0.075	0.82	1.89	16.21	235	0.0	
1010	4.25	200	5.38	0.073	0.43	1.88	16.28	221	0.0	
1015	4.25	200	5.34	0.072	2.10	1.60	16.34	223	0.0	
1020	4.25	200	5.33	0.069	1.25	1.54	16.37	223	0.0	
	Sample @ 1020									

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

Sample ID No.: ~~MRC-MW-051815~~ 90B-051815
Sample Location: MRC-MW-90B
Sampled By: TG
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 5/18/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1355	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	clear	11.33	1.53	18.52	10.5	0.76	0.8	-139

PURGE DATA:

Date: 5/18/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1250								
End Purge (hrs): 1355								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 4 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3 x 40 mL glass	3
1,4 dioxane	$NaHSO_4$	1 x 500 mL amber	1
Perchlorate	None	1 x 250 mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-90B-051815
DATE: 5/18/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1250	6.97									Begin Purging
1300	8.56	250	11.15	1.76	9.7	2.94	17.85	-32	0.9	
1309	~~10.01~~ 9.01		11.38	1.73	10.1	2.18	18.23	-68	0.9	
1317	9.16	200	11.42	1.68	11.6	1.87	18.56	-88	0.9	
1324	9.30		11.42	1.68	10.9	1.27	18.56	-101	0.8	
1330	9.44	250	11.41	1.66	9.4	1.08	18.54	-110	0.8	
1335	9.63		11.40	1.63	9.1	0.95	18.36	-120	0.8	
1340	9.71	270	11.39	1.61	7.1	0.88	18.36	-124	0.8	
1345	9.65		11.39	1.58	10.3	~~0.80~~ 0.79	18.43	-127	0.8	
1350	9.85	300	11.35	1.56	11.0	0.79	18.47	-134	0.8	
1355	9.89		11.33	1.53	10.5	0.76	18.52	-139	0.8	Begin sampling
1402										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-91A-04222015
Sample Location: MW-91A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-22-15 / Time: 1215	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Slight	6.09	3.09	18.83	62	1.33	1.5	130

PURGE DATA:

Date: 4-22-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See	low	flow	purge			
Total Well Depth (TD):			Data	sheet				
Static Water Level (WL): 9.12								
One Casing Volume(gal/L):								
Start Purge (hrs): 1039								
End Purge (hrs): 1210								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
1,4 Dioxane	HCl	2 - 500 ml Ambers	

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pe

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-91A-042215
DATE: 4-22-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1039	9.12	—	—	—	—	—	—	—	—	Initial, no odor
1040	9.90	300	6.26	3.81	125	2.63	18.03	184	2.0	Cloudy water
1045	9.90	300	6.22	3.88	40.5	2.63	18.12	190	2.0	↓
1050	10.10	300	6.22	3.85	39.6	2.39	18.06	193	2.0	↓
1100	10.37	200	6.21	3.85	16.9	2.31	17.85	199	2.0	↓
1110	10.70	200	6.22	3.85	3.7	2.21	17.84	202	2.0	Clear water
1115	10.82	100	6.22	3.85	1.5	2.22	18.01	202	2.0	↓
1120	10.85	100	6.20	3.70	6.3	1.99	18.02	201	~~2~~ 1.8	↓
1125	11.07	100	6.20	3.66	7.6	1.68	18.03	200	1.9	↓
1130	11.20	100	6.16	3.49	102	1.36	18.07	197	1.8	Cloudy water
1140	11.35	100	6.12	3.35	95	1.27	18.25	194	1.7	↓
1150	11.55	100	6.10	3.24	81	1.24	18.68	191	1.7	↓
1200	11.85	100	6.10	3.11	70	1.30	18.64	145	1.6	↓
1210	12.00	100	6.09	3.09	62	1.33	18.83	130	1.5	↓
		Well parameters did not stabilize								
		after 90 min max purge per work plan								
		Sampling Begins								

SIGNATURE(S): Walt Pe

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-92C-042315
Sample Location: MRC-MW-92C
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/23/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1035								ORP
Method: Low flow	Clear	6.56	0.334	~~16.79~~ 16.79	122	1.22	0.2	-108

PURGE DATA:

Date: 4/23/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0946								
End Purge (hrs): 1035								
Total Purge Time (min): 49								
Total Vol. Purged (gal/L): 2.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x 40mL glass	3
Total Metals (Hg)	Nitric Acid	1x 500mL plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: ~~LMMRC~~ LMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-92C-042315
DATE: 4/23/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0946	14.38									Begin purging
0956	17.78	230	6.69	0.352	20.5	2.67	16.77	-98	0.2	
1005	20.92		6.59	0.344	18.4	1.81	17.13	-104	0.2	
1013	21.71	150	6.57	0.339	14.0	1.54	16.80	-106	0.2	
1020	23.03		6.55	0.337	12.1	1.39	16.84	-106	0.2	
1025	24.07	150	6.55	0.337	12.8	1.34	16.90	-107	0.2	
1030	24.99		6.56	0.335	12.5	1.27	16.81	-107	0.2	
1035	25.45		6.56	0.334	12.2	1.22	16.79	-108	0.2	Begin Sampling
1042										Sampling complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 117-100247

Sample ID No.: MRL-MW-93A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 5/14/15								
Time: 0910								
Method: peristaltic pump								

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/14/15								
Method: peristaltic pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC		SEE LOW FLOW PURGE DATA SHEET						
Total Well Depth (TD): -								
Static Water Level (WL): 8.24								
One Casing Volume(gal/L): -								
Start Purge (hrs): 1040								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

well went dry, too turbid to pull sample, revisit and pull sample later date @ 5/14/15 @ 0910

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-93A-050115
DATE: 5/1/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1040	8.24	—	—	—	—	—	—	—	—	
1045	8.59	200	4.09	3.91	81.8	1.67	14.19	292	2.1	
1050	8.85	200	4.71	3.99	75.3	0.99	13.79	266	2.1	
1055	9.40	200	4.85	3.96	82.5	1.06	13.62	256	2.1	
1100	10.00	150	5.74	3.43	69.3	2.11	13.72	212	1.7	
1105	10.44	150	6.20	2.71	49.8	2.90	13.81	187	1.4	
1110	10.75	150	6.25	2.63	41.8	2.68	13.78	171	1.3	
1115	11.19	150	6.22	2.71	57.8	2.86	13.86	148	1.4	
1120	11.57	150	6.11	2.95	40.8	2.31	14.06	144	1.5	
1125	12.09	150	5.58	3.61	40.2	1.43	13.75	152	1.5	
1130	12.50	150	5.57	3.62	40.0	1.37	13.78	154	1.5	
	~~Sample VOCs + Total metals @ 1130~~									
		WELL WENT DRY + TOO TURBID TO PULL SAMPLE,								
			RE REVISIT @ LATER DATE @ 5/14/15 @ 0910							

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: middle River center
Project No.: 112IC06247

Sample ID No.: MRC-MW-94B-043015
Sample Location: MW-94B
Sampled By: VP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4-30-15								
Time: 1327								
Method: Peristaltic pump	Clear	6.80	0.067	15.14	0.0	1.06	0.05	119

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-30-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow purge					
Total Well Depth (TD):								
Static Water Level (WL): 4.30			Data		Sheet			
One Casing Volume(gal/L):								
Start Purge (hrs): 1236								
End Purge (hrs): 1322								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.75								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	7 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

717 944-5541

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-948-043015
DATE: 4-30-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1236	4.30	—	—	—	—	—	—	—	—	Initial pre odum
1237	4.65	300	8.45	0.135	0.0	1.63	18.98	138	0.0	Clear Water
1242	4.60	200	8.80	0.132	0.0	0.53	18.43	89	0.0	
1247	4.60	200	8.90	0.118	0.0	0.40	16.64	71	0.1	
1252	4.60	200	7.73	0.102	0.0	0.63	15.59	87	0.0	
1307	4.60	200	6.55	0.087	0.0	1.01	15.19	117	0.0	
1312	4.60	200	6.86	0.089	0.0	0.89	15.16	121	0.0	
1317	4.60	200	6.83	0.088	0.0	0.90	15.12	119	0.0	
1322	4.60	200	6.80	0.087	0.0	1.00	15.14	119	0.0	
			Well parameter Stabilized							
				Sample Begins						

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-95B-043015
Sample Location: MW-95B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-30-15 / Time: 1132 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other

PURGE DATA:

Date: 4-30-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 3.70								
One Casing Volume(gal/L):								
Start Purge (hrs): 1041								
End Purge (hrs): 1127								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD ✓

Duplicate ID No.:

Signature(s):

Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-95B-043015
DATE: 4-30-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1041	3.70	—	—	—	—	—	—	—	—	Initial, pre pump
1042	4.27	300	6.41	0.459	41.7	0.96	17.62	180	0.2	Slightly Cloudy
1047	4.50	180	6.16	1.02	46.0	0.39	17.28	119	0.5	↓
1052	4.65	180	6.13	1.18	47.9	0.28	17.23	103	0.6	↓
1102	4.75	100	6.11	1.39	45.1	0.22	17.35	89	0.7	↓
1112	4.80	100	6.09	1.41	20.1	0.26	17.27	82	0.7	↓
1117	4.80	100	6.09	1.40	7.69	0.29	17.23	79	0.7	Clear water
1122	4.80	100	6.08	1.38	5.23	0.30	17.25	79	0.7	↓
1127	4.80	100	6.07	1.36	3.75	0.31	17.23	78	0.7	↓
	→	→	Well	Parameters		Stabilize	→	→		
	→	→		Sampling		Begin	→	→		

SIGNATURE(S): Walt R

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: Middle River Center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-SLA-0510
Sample Location: MW-SLA
Sampled By: KP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-11-15 / Time: 1011 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	7.84	0.827	16.64	0.0	0.27	0.4	363

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5-11-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low flow purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 11.23								
One Casing Volume(gal/L):								
Start Purge (hrs): 0920								
End Purge (hrs): 1006								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	Na2SO4	2 - 500 ml Ambers	✓
Perchlorate	—	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

Circle If Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Nate R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-96A-051115
DATE: 5-11-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0920	11.23	—	—	—	—	—	—	—	—	Initial, no color
0921	11.55	300	3.79	0.810	107	1.29	18.13	384	0.4	cloudy water
0926	11.86	250	3.74	0.815	28.(	0.60	16.61	404	0.4	↓
0931	12.11	200	3.74	0.814	17.3	0.38	16.17	413	0.4	↓
0941	12.40	150	3.75	0.816	0.0	0.32	15.94	407	0.4	Clean water
0951	12.51	100	3.78	0.819	0.0	0.32	16.57	378	0.4	↓
0956	12.56	100	3.79	0.825	0.0	0.29	16.47	372	0.4	↓
1001	12.58	100	3.81	0.826	0.0	0.28	16.64	366	0.4	↓
1006	12.60	100	3.84	0.827	0.0	0.27	16.69	363	0.4	
			Well parameter Stabilize							
				Sampling Begins						

SIGNATURE(S): Walt R

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112FC06247

Sample ID No.: MRC-MW-96B-051115
Sample Location: MW-96B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 5-11-15 / Time: 1124 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	4.24	3.38	17.79	0.0	1.32	1.7	375

PURGE DATA:

Date: 5-11-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):								
Static Water Level (WL): 15.55								
One Casing Volume(gal/L):								
Start Purge (hrs): 1033								
End Purge (hrs): 1119								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.0								

See Low Flow Purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total Metals	HNO_3	1 - 500 ml Poly	✓
1,4 Dioxane	Methanol	2 - 500 ml Ambers	✓
Perchlorate	—	1 - 250 ml Poly	✓

OBSERVATIONS / NOTES:

QC# If Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Walt Pa

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-96B-051115
DATE: 5-11-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1033	15.55	—	—	—	—	—	—	—	—	Initial pre water
1034	15.60	300	4.40	3.31	0.0	3.58	17.97	387	1.7	clean water
1039	15.65	200	4.37	3.35	0.0	3.33	18.00	398	1.8	
1044	15.65	200	4.25	3.38	0.0	2.89	17.82	401	1.8	
1054	15.65	200	4.18	3.43	0.0	1.40	17.62	398	1.8	
1104	15.65	200	4.14	3.44	0.0	1.49	17.72	394	1.8	
1108	15.65	200	4.20	3.43	0.0	1.38	17.76	385	1.8	
1114	15.65	200	4.22	3.40	0.0	1.35	17.78	386	1.8	
1119	15.65	200	4.24	3.38	0.0	1.32	17.74	375	1.7	
			Well parameter Stabilize							
			Sampling Begin							

SIGNATURE(S): Walt Re

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 1125 C06247

Sample ID No.: MR M
Sample Location: M
Sampled By: WP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-18-15 / Time: 1336 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	6.83	0.704	20.52	8.54	1.68	0.3	106

PURGE DATA:

Date: 5-18-15 / Method: Peristaltic pump	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):			See Low flow purge					
Static Water Level (WL): 6.30								
One Casing Volume(gal/L):			Data Sheet					
Start Purge (hrs): 1245								
End Purge (hrs): 1331								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	4 Malt 504	2 - 500 ml Ambers	✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Walt P

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle Rosen Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-98A-051815
DATE: 5-18-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1245	6.30	—	—	—	—	—	—	—	—	Initial pre purge
1246	6.61	300	6.68	0.614	383	1.86	27.17	55	0.3	Cloudy water
1251	6.75	150	6.69	0.644	345	1.43	25.25	74	0.3	↓
1256	6.80	100	6.74	0.663	364	1.36	23.30	91	0.3	↓
1306	7.25	100	6.78	0.681	15.5	1.36	21.54	101	0.3	Slightly Cloudy
1316	7.55	100	6.82	0.694	9.31	1.49	21.16	106	0.3	Clean water
1321	7.65	100	6.83	0.704	8.64	1.64	20.71	106	0.3	↓
1326	7.70	100	6.83	0.703	8.60	1.66	20.58	106	0.3	↓
1331	7.75	100	6.83	0.704	8.54	1.68	20.52	106	0.3	↓
			Well Parameters Stabilize							
				Sampling Begins						

SIGNATURE(S): W R

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-98B-051815
Sample Location: MW-98B
Sampled By: WP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5-18-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1540								ORP
Method: Peristaltic pump	clear	4.97	0.755	23.58	0.0	0.00	0.4	157

PURGE DATA

Date: 5-18-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD):			See Low Flow Purge					
Static Water Level (WL): 10.15								
One Casing Volume(gal/L):			Data Sheet					
Start Purge (hrs): 1404								
End Purge (hrs): 1535								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 2.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total Metals	HNO3	1 - 500 ml Poly	✓
1,4 Dioxane	NaHSO4	1 - 500 ml Amber	✓

OBSERVATIONS / NOTES:

Dup 08 for metals

Trip If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	MRC-DUP08-051415	

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112EC06247

WELL ID.: MRC-MW-98B-051815
DATE: 5-18-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1404	10.15	—	—	—	—	—	—	—	—	Initial, model clean water
1405	11.40	300	5.00	0.768	0.0	0.49	22.04	138	0.4	
1410	11.95	100	4.98	0.771	0.0	0.34	22.18	144	0.4	
1415	12.40	100	4.99	0.776	0.0	0.22	22.21	147	0.4	
1425	12.65	100	4.99	0.809	0.0	0.33	22.34	146	0.4	
1435	13.80	100	4.97	0.776	0.0	0.04	22.82	151	0.4	
1445	14.95	100	4.96	0.768	0.0	0.00	22.87	154	0.4	
1455	15.68	100	4.96	0.770	0.0	0.00	23.03	155	0.4	
1505	16.55	100	4.96	0.763	0.0	0.00	23.32	157	0.4	
1515	16.55	100	4.97	0.761	0.0	0.00	23.56	157	0.4	
1525	17.35	100	4.99	0.757	0.0	0.00	23.91	157	0.4	
1535	18.40	100	4.97	0.755	0.0	0.00	23.98	157	0.4	

Well Parameters did not stabilize after 90 min of max purge per Work Plan Sampling Begins

SIGNATURE(S): Walt R

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 117IC06247

Sample ID No.: MRL-MW-100A
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/6/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1110								
Method: peri pump	Clear	6.02	0.559	19.41	7.96	1.00	0.3	ORP 2.5

PURGE DATA:

Date: 5/6/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material Type: 2" PVC		566 Cal Flow PURGE DATA SHEET						
Total Well Depth (TD): –								
Static Water Level (WL): 9.95								
One Casing Volume(gal/L): –								
Start Purge (hrs): 1010								
End Purge (hrs): 1110								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	3-4 drops HCl	3-40 ml vials	✓
1-4 dioxane	NaHSO4	1-500 ml amber	✓

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-100A
DATE: 5/6/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1010	9.95	–	–	–	–	–	–	–	–	
1015	10.23	200	5.85	0.528	72.9	2.05	20.33	177	0.3	
1020	10.41	200	5.93	0.532	46.0	1.51	19.79	92	0.3	
1025	10.60	200	5.95	0.537	29.0	1.38	19.45	59	0.3	
1030	10.79	200	5.96	0.540	30.6	1.34	19.43	46	0.3	
~~1035~~ 1035	10.91	200	5.97	0.543	26.6	1.25	19.64	38	0.3	
1040	11.06	200	5.98	0.544	24.1	1.32	19.68	36	0.3	
1045	11.20	200	5.99	0.544	20.4	1.20	19.73	32	0.3	
1050	11.29	200	5.99	0.547	17.2	1.16	19.63	31	0.3	
1055	11.39	200	6.00	0.549	12.3	1.11	19.60	30	0.3	
1100	11.45	200	6.01	0.552	11.56	1.08	19.60	29	0.3	
1105	11.50	200	6.01	0.557	8.75	1.07	19.73	28	0.3	
1110	11.55	200	6.02	0.559	7.96	1.00	19.91	28	0.3	
	Sample VOCs, 1-4 dioxane @ 1110									

SIGNATURE(S): [signature]

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Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL GW 2015
Project No.: 112G06247

Sample ID No.: MRL-MW-100B
Sample Location: MRL
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[ ] High Concentration

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 5/6/15								
Time: 1230								
Method: peristaltic pump	Clear	5.50	0.293	22.24	12.6	0.27	0.1	7

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/6/15								
Method: peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE Low Flow PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 10.68								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1175								
End Purge (hrs): 1230								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): ~3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
Total Metals	HNO3	1-500 mL plastic	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓

OBSERVATIONS / NOTES:

Circle If Applicable:
MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC-GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-100B
DATE: 5/6/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1125	10.68	—	—	—	—	—	—	—	—	
1130	11.70	200	5.49	0.313	750	1.54	22.90	19	0.1	
1135	12.45	200	5.49	0.314	95.0	1.24	22.13	14	0.1	
1140	13.27	200	5.49	0.312	40.4	0.99	21.97	12	0.1	
1145	14.05	200	5.48	0.302	24.7	0.92	21.85	13	0.1	
1150	14.78	200	5.47	0.299	20.8	0.89	21.78	12	0.1	
1155	15.51	200	5.53	0.296	20.6	0.88	21.68	12	0.1	
1200	16.25	200	5.49	0.298	21.2	0.73	21.87	11	0.1	
1205	16.87	200	5.49	0.293	20.1	0.36	21.89	10	0.1	
1210	17.51	200	5.49	0.293	18.2	0.37	22.00	9	0.1	
1215	18.10	200	5.49	0.292	18.1	0.34	22.17	9	0.1	
1220	18.67	200	5.50	0.293	18.8	0.29	22.18	9	0.1	
1225	18.75	200	5.50	0.293	18.9	0.28	22.19	7	0.1	
1230	18.80	200	5.50	0.293	17.6	0.27	22.24	7	0.1	
	Sample	VOCs, 1-4	dioxane,	Total	Metals	@ 1230				

SIGNATURE(S): [signature]

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Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-101A-042015
Sample Location: MW-101A
Sampled By: WP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-21-15	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Time: 1130								
Method: Peristaltic pump	Clear	4.58	0.312	16.68	1.8	1.36	0.1	236

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-20-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low flow purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 4.95								
One Casing Volume(gal/L):								
Start Purge (hrs): 1315								
End Purge (hrs): 1342								
Total Vol. Purged (gal/L): 0.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Walt B

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: middle River Century
PROJECT NUMBER: 112F06247

WELL ID.: MRC-MW-101A-042015
DATE: 4-20-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1315	14.95	—	—	—	—	—	—	—	—	Initial, no odor
1317	15.30	200	4.26	0.292	5.1	3.18	19.16	261	0.1	
1322	15.50	100	4.23	0.301	3.6	2.97	17.65	264	0.1	
1327	15.80	100	4.21	0.318	3.3	2.45	15.77	267	0.1	
1332	17.60	100	4.36	0.313	2.6	1.68	15.45	258	0.1	
1342	Dry	100	4.54	0.312	1.8	1.35	16.64	231	0.1	
		Well went dry left recharge 80% of								
		original volume before Sampling.								

SIGNATURE(S): Walt Pe

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-101B-042115
Sample Location: MW-101B
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Date: 4-21-15								
Time: 1342								
Method: Peristaltic pump	Slightly	4.45	0.179	15.23	64	0.05	0.1	229

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-21-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 14.20								
One Casing Volume(gal/L):								
Start Purge (hrs): 1226								
End Purge (hrs): 1337								
Total Purge Time (min): 71								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-mw-101B-042115
DATE: 4-21-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1226	14.20	—	—	—	—	—	—	—	—	Initial, no odor
1227	15.07	300	4.94	0.226	74	2.86	17.07	200	0.1	Slightly cloudy
1232	16.57	300	4.97	0.199	72	0.94	17.23	208	0.1	
1237	17.65	200	4.95	0.182	70	0.57	16.66	210	0.1	
1242	19.70	100	4.96	0.180	68	0.26	16.23	213	0.1	
1252	22.70	100	4.94	0.181	66	0.00	15.87	226	0.1	
1307	24.65	100	4.93	0.180	65	0.21	15.64	222	0.1	
1317	26.00	100	4.88	0.181	66	0.13	14.91	229	0.1	
1327	26.02	100	4.91	0.180	63	0.05	15.18	229	0.1	
1332	26.02	100	4.93	0.180	63	0.04	15.16	229	0.1	
1337	26.02	100	4.95	0.179	64	0.05	15.23	229	0.1	
			Well parameters Stabilized							
			Sampling Begins							

SIGNATURE(S): Walt Pa

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-102A-042015-
Sample Location: MW-102A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-20-15	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Time: 0942								
Method: Peristaltic pump	Clear	6.16	1.18	15.37	6.3	2.05	6.6	-93

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-20-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge data sheet						
Total Well Depth (TD):								
Static Water Level (WL): 9.95								
One Casing Volume(gal/L):								
Start Purge (hrs): 08:51								
End Purge (hrs): 0937								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3- 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt Pa

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 162IC06247

WELL ID.: MRC-MW-102A-042015
DATE: 4-20-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0851	9.95	—	—	—	—	—	—	—	—	Initial, no odor
0852	10.25	300	5.82	1.30	29.8	4.29	16.16	-23	0.6	Slightly cloudy
0857	10.60	300	6.07	1.28	37.7	3.29	15.32	-65	0.6	↓
0902	10.90	200	6.15	1.27	15.9	3.35	15.43	-83	0.6	↓
0912	11.56	100	6.14	1.25	9.9	2.66	15.30	-90	0.6	Clear water
0922	11.62	100	6.13	1.22	3.7	2.57	15.28	-88	0.6	↓
0927	11.82	100	6.14	1.18	6.3	2.25	15.28	-89	0.6	↓
0932	11.87	100	6.15	1.18	6.2	2.13	15.30	-91	0.6	↓
0937	11.90	100	6.16	1.18	6.3	2.05	15.37	-93	0.6	↓
				Well parameter stabilized						
				Sampling Begin						

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Complex
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-102B-042015
Sample Location: MW-102B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-20-15 / Time: 1124 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
	Clear	4.29	0.132	14.23	0.0	0.47	0.1	189

PURGE DATA:

Date: 4-20-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See Low Flow Purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 11.00								
One Casing Volume(gal/L):								
Start Purge (hrs): 0948								
End Purge (hrs): 1119								
Total Purge Time (min): 91								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total Metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD ~

Duplicate ID No.:

Signature(s): Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112Cc6247
WELL ID.: MRC-MW-102B-042015
DATE: 4-20-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0944	11.00	—	—	—	—	—	—	—	—	Initial pump depth
0949	12.15	300	4.93	0.169	0.0	4.37	16.59	73	0.1	clear water
0954	13.10	100	4.39	0.161	0.0	2.41	16.82	102	0.1	
0959	13.60	100	4.34	0.159	0.0	2.13	16.41	111	0.1	
1004	15.70	100	4.29	0.143	0.0	1.16	16.58	135	0.1	
1014	17.10	100	4.33	0.139	0.0	0.53	16.79	145	0.1	
1024	18.62	100	4.41	0.137	0.0	0.66	17.22	158	0.1	
1034	20.20	100	4.36	0.135	0.0	0.51	17.47	164	0.1	
1044	21.55	100	4.27	0.134	0.0	0.48	17.64	175	0.1	
1054	23.80	100	4.24	0.133	0.0	0.72	17.85	169	0.1	
1104	24.50	100	4.33	0.133	0.0	0.52	18.09	181	0.1	
1114	25.85	100	4.29	0.132	0.0	0.47	18.23	189	0.1	
			Well parameters did not stabilize after 60 min Max purge per work plan Sampling Begins							

SIGNATURE(S): [signature]

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-103A-041415
Sample Location: MRC-MW-103A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/14/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1130	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	Clear	4.67	0.083	12.58	3.2	3.49	0.0	232

PURGE DATA:

Date: 4/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1046								
End Purge (hrs): 1130								
Total Purge Time (min): 44								
Total Vol. Purged (gal/L): 2gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	2x1L ambers	2

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-103A-041415
DATE: 4/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1046	3.26									Begin Purge
1056	6.32	230	4.82	0.084	7.6	4.20	12.60	176	0.0	
1104	6.76		4.66	0.083	5.7	3.82	12.46	201	0.0	
1 1112	7.38	240	4.65	0.082	5.7	3.46	12.52	215	0.0	
2 1119	8.00		4.69	0.082	5.0	3.55	12.52	220	0.0	
3 1125	8.36	220	4.68	0.083	3.4	3.52	12.56	228	0.0	
1130	8.67		4.67	0.083	3.2	3.49	12.58	232	0.0	Begin Sampling

SIGNATURE(S):

jm

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112EC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-103B-04 4/15
Sample Location: MRC-MW-103B
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/14/15 Time: 1230	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Low flow	clear	5.18	0.042	15.07	1.8	1.43	0.0	180

PURGE DATA:

Date: 4/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1146								
End Purge (hrs): 1230								
Total Purge Time (min): 44								
Total Vol. Purged (gal/L): 2.9 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	~~1 L~~ 2x 1L ambers	2

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-103B-041415
DATE: 4/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1146	5.76									Begin purging
1156	7.28	260	5.20	0.042	5.3	2.45	14.78	198	0.0	
1204	8.07		5.13	0.041	3.0	1.91	14.88	193	0.0	
1211	8.61	220	5.17	0.041	2.3	1.69	14.94	190	0.0	
2 1218	8.9[illegible]9		5.16	0.041	2.7	1.58	14.99	186	0.0	
3 1225	9.37	220	5.16	0.041	1.7	1.49	15.05	183	0.0	
1230	9.53		5.18	0.042	1.8	1.43	15.07	180	0.0	Begin Sampling
1241										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-104A-042815-
Sample Location: MW-104A
Sampled By: MP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-28-15 / Time: 1204	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Method: Peristaltic pump	Clear	5.41	1.83	14.57	7.1	1.30	0.8	256

PURGE DATA:

Date: 4-28-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See Low Flow Purge Data Sheet						
Total Well Depth (TD):								
Static Water Level (WL): 5.02								
One Casing Volume(gal/L):								
Start Purge (hrs): 1113								
End Purge (hrs): 1159								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-104A-042815
DATE: 4-28-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1113	5.02	—	—	—	—	—	—	—	—	Initial, no odor
1114	5.35	300	5.27	1.79	852	2.58	16.19	276	0.9	Cloudy water
1119	5.67	300	5.34	1.79	367	1.80	15.83	272	0.9	↓
1124	5.95	200	5.34	1.81	88.2	1.57	15.49	267	0.9	↓
1134	6.40	100	5.35	1.83	21.5	1.44	15.03	261	0.9	↓
1144	6.90	100	5.40	1.83	11.6	1.35	14.74	257	0.9	Clean water
1149	7.00	100	5.40	1.83	7.3	1.33	14.65	257	0.9	↓
1154	7.05	100	5.41	1.83	7.0	1.31	14.62	257	0.9	↓
1159	7.10	100	5.41	1.83	7.1	1.30	14.57	256	0.9	↓
				Well parameters stabilize →						
				Sampling Begins						

SIGNATURE(S): [signature]

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-104B-042815
Sample Location: MW-104B
Sampled By: VP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4-28-15								
Time: 1302								ORP
Method: Peristaltic pump	Clear	4.80	2.13	14.62	0.0	0.14	1.1	324

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-28-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See	low	flow	purge		
Total Well Depth (TD):								
Static Water Level (WL): 6.25			Data	Sheet				
One Casing Volume(gal/L):								
Start Purge (hrs): 1211								
End Purge (hrs): 1257								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Complex
PROJECT NUMBER: 1CIC06247

WELL ID.: MEC-MW-104B-042815
DATE: 4-28-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1211	6.25	—	—	—	—	—	—	—	—	Initial, no odor
1212	7.05	300	4.96	1.88	64.0	2.04	15.13	263	1.0	Slightly cloudy
1217	7.15	250	4.89	2.03	3.7	0.52	14.51	297	1.0	Clear Water
1222	7.15	250	4.89	2.04	2.7	0.50	14.52	299	1.0	
1232	7.15	250	4.84	2.11	1.0	0.25	14.60	311	1.0	
1242	7.15	250	4.82	2.14	0.0	0.22	14.71	318	1.1	
1247	7.15	250	4.81	2.14	0.0	0.15	14.71	320	1.1	
1252	7.15	250	4.80	2.13	0.0	0.14	14.69	322	1.1	
1257	7.15	250	4.80	2.13	0.0	0.14	14.62	324	1.1	
			Well parameter Stab. 1-2							
			Sampling Begins							

SIGNATURE(S): Walt R

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-105A-042715
Sample Location: MW-105A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-27-15	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Time: 1129								
Method: Peristaltic pump	Clear	5.28	0.857	12.34	0.0	2.18	0.4	291

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-27-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow purge Data Sheet					
Total Well Depth (TD):								
Static Water Level (WL): 4.85								
One Casing Volume(gal/L):								
Start Purge (hrs): 1037								
End Purge (hrs): 1124								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total metals	HNO3	1- 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):
Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-105A-042715
DATE: 4-27-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1038	4.85	—	—	—	—	—	—	—	—	Initial, pre action
1039	5.50	300	4.86	0.853	1.0	3.61	12.56	293	0.4	Clean water
1044	6.10	200	5.17	0.848	0.0	2.42	12.28	292	0.4	
1049	6.01	100	5.24	0.842	0.0	2.51	12.55	294	0.4	
1054	6.05	100	5.27	0.845	0.0	2.41	12.30	293	0.4	
1109	6.10	150	5.28	0.848	0.0	2.33	12.29	292	0.4	
1114	6.15	100	5.28	0.853	0.0	2.30	12.27	292	0.4	
1119	6.15	150	5.28	0.855	0.0	2.25	12.27	292	0.4	
1124	6.15	150	5.28	0.857	0.0	2.18	12.34	291	0.4	
			Well parameters Stabilized							
			Sampling Begins							

SIGNATURE(S): Walt Re

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MRC-MW-106B/C-062515
Sample Location: MRC-MW-106B/C
Sampled By: TG
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 6/25/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1105								
Method: Low flow	clear	5.49	0.120	26.23	11.1	1.00	+090.1	-104

PURGE DATA:

Date: 6/25/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri-PUMP								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):			See	Purge	Data	Sheet		
One Casing Volume(gal/L):								
Start Purge (hrs): 1015	1015							
End Purge (hrs): 1105								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 1.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3x40mL VOAs	3

OBSERVATIONS / NOTES:

QC Info if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMRC
PROJECT NUMBER: 112EC06247
WELL ID.: MRC-MW-106B/C-062515
DATE: 6/25/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1015	1.54									Begin Purging
1025	3.70	100	5.63	0.128	10.6	1.40	27.05	42	0.1	
1035	5.38		5.55	0.124	10.8	1.26	26.83	69	0.1	
1045	8.20	100	5.48	0.120	7.5	1.07	26.25	95	0.1	
1053	9.39		5.48	0.120	11.3	0.97	26.20	100	0.1	
1100	10.82	100	5.51	0.120	11.4	0.95	26.22	103	0.1	
1105	11.59		5.49	0.120	11.1	1.00	26.23	104	0.1	Begin Sampling
1108										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRL
Project No.:

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRL-MW107B/C-062515
Sample Location: MW107B/C
Sampled By: SRC
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-25-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1505								
Method: Peri Pump	Slight Sm.	5.51	0.103	19.43	66.4	0.00	0.1	-147

PURGE DATA:

Date: 6-25-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peri Pump			See Low Flow Purge Data Sheet					
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): 55.10								
Static Water Level (WL): 0								
One Casing Volume(gal/L):								
Start Purge (hrs): 1415								
End Purge (hrs): 1520								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 2gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL Vials	✓
Total Metals	HNO_3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC
PROJECT NUMBER:
WELL ID.: MRC-MW107B/C-062515
DATE: 6-25-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1415	0	—	—	—	—	—	—	—	—	
1420	1,98	300	5,23	0,186	80.2	1.00	21,74	101	0,1	
1425	3,64	250	5.00	0,127	69,7	0.09	18,75	142	0,1	
1430	4,77	200	5,11	0,118	65.0	0,05	18,61	145	0,1	
1435	5.61	200	5,21	0,116	68,2	0.04	18,60	144	0,1	
1440	6.54	200	5,33	0,112	71,3	0.01	18,59	143	0,1	
1445	7,21	200	5,41	0,111	68,7	0,00	18,91	142	0,1	
1450	8,13	200	5,45	0,110	69,6	0,00	19,21	142	0,1	
1455	9,64	200	5,48	0,109	60,4	0.00	19,36	144	0,1	
1500	10,62	200	5,50	0,106	64.7	0.00	19,47	146	0,1	
1505	11,60	200	5,51	0,103	66,4	0,00	19,43	147	0,1	
Sampling										

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-109A-051815
Sample Location: MRC-MW-109A
Sampled By: TG
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: ~~5/14/15~~ 5/18/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1425								
Method: Low flow	Brown							

PURGE DATA:

Date: 5/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1147								
End Purge (hrs): 1224								
Total Purge Time (min): 37								
Total Vol. Purged (gal/L): 1.5gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x40mL glass	3
Total Metals (Hg)	Nitric Acid	1x500 mL plastic	1
Perchlorate	None	1x250mL plastic	1

OBSERVATIONS / NOTES:

- Well ran dry after 30+min of purging
  ↳ No sample taken on MW-109A as of 5/18/15

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-109A-051415
DATE: 5/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1147	11.71									Begin Purging
1157	12.16	240	5.52	0.716	23.4	0.38	14.56	16	0.4	
1206	12.87		5.40	0.634	11.1	0.05	14.25	25	0.3	
1214	13.71	240	5.88	0.660	27.9	0.00	14.25	-49	0.3	
1221	14.29		5.98	0.690	101.0	0.55	15.51	-68	0.3	
1228										Well is dry
~~1234~~ 1224										Purge stopped
5/18										
1425										Begin Sampling
1430										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: ~~MRC MW~~ To LMMRC
Project No.: 112IC06247

Sample ID No.: MRC-MW-109B-051415
Sample Location: MRC-MW-109B
Sampled By: IG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5/14/15								
Time: 1401	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	clear	5.14	1.11	17.62	5.3	0.00	0.5	178

PURGE DATA:

Date: 5/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~	~~Other~~ ORP
Method: Low flow							0.7	92
Monitor Reading (ppm):							0.5	74
Well Casing Diameter & Material							0.4	81
Type:							0.4	100
Total Well Depth (TD):							0.4	115
Static Water Level (WL):							0.5	129
One Casing Volume(gal/L):							0.5	139
Start Purge (hrs): 1231							0.5	146
End Purge (hrs): 1406							0.5	157
Total Purge Time (min): 90							0.5	164
Total Vol. Purged (gal/L): 6 gal							0.5	157
							0.5	168 → 0.5/17

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs (8260)	HCl	3x40mL glass	3
Total Metals (Hg)	Nitric Acid	1x500mL Plastic	1
Perchlorate	None	1x250mL Plastic	1

OBSERVATIONS / NOTES:

- 90-Minute Purge limit reached

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

DTP085

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMMRC
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-109B-051415
DATE: 5/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1231	16.40									Begin purging
1241	16.52	250	5.48	1.34	33.0	0.26	17.22	92	0.7	
1250	16.53		5.68	1.16	12.0	0.03	17.32	74	0.5	
1258	↓	250	5.79	0.876	20.1	0.04	17.35	81	0.4	
1306			5.68	0.872	52.2	0.00	17.37	100	↓	
1313	16.54	250	5.60	0.890	36.0	↓	17.42	115		
1319	16.55		5.53	0.926	25.9		17.44	129	0.5	
1325	16.56	300	5.45	0.949	47.1		17.45	139	↓	
1330	↓		5.38	0.974	26.0		17.49	146		
1335		300	5.34	0.999	13.1		17.51	157		
1340	16.57		5.29	1.01	4.2		17.53	164		
1345	16.56	300	5.26	1.06	63.5		17.58	157		
1350	↓		5.22	1.08	17.0		17.61	168		
1355		300	5.18	1.09	6.6		17.60	173		
1401	↓		5.14	1.11	5.3	↓	17.62	178	↓	
1406										Sampling Complete

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-410A-041715
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/17/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 1125								
Method: peri pump	clear							

PURGE DATA:

Date: 4/17/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		SEE Low Flow PURGE DATA SHEET						
Total Well Depth (TD): —								
Static Water Level (WL): 2.80								
One Casing Volume(gal/L): —								
Start Purge (hrs): 0955								
End Purge (hrs): 1125								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): ~5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Perchlorate	—	1-250 mL plastic	✓
Total Metals	HNO3	1-500 mL plastic	✓

OBSERVATIONS / NOTES:

* 90 min purge limit reached

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MAC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MAC-MW-110A-041715
DATE: 4/17/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0955	2.80	—	—	—	—	—	—	—	—	
1000	3.75	300	4.96	4.28	95.5	1.19	15.49	165	2.3	
1005	5.04	300	5.01	4.46	75.1	0.14	15.17	168	2.4	
1010	5.51	200	5.02	4.47	61.4	0.15	15.25	169	2.4	
1015	5.91	200	5.04	~~5.944~~ 5.39	~~0.00~~ 53.9	0.00	15.40	167	2.4	
1020	6.22	200	5.06	4.45	49.1	0.04	15.54	166	2.4	
1025	6.51	200	5.06	4.44	43.4	0.00	15.58	166	2.4	
1030	6.76	200	5.07	4.44	37.2	0.00	15.50	166	2.4	
1035	7.00	200	5.07	4.40	34.4	0.00	15.65	166	2.3	
1040	7.20	200	5.07	4.39	30.4	0.00	15.68	167	2.3	
1045	7.35	200	5.07	4.36	31.8	0.00	15.68	169	2.3	
1050	7.50	200	5.06	4.32	27.7	0.00	15.79	~~169~~ 170	2.3	
1055	7.60	200	5.05	4.28	23.0	0.00	15.86	172	2.3	
1100	7.70	200	5.05	4.19	19.8	0.00	16.04	175	2.2	
1105	7.80	200	5.03	4.14	16.4	0.00	16.24	177	2.2	
1110	7.90	200	5.02	4.04	13.0	0.00	16.46	180	2.1	
1115	8.00	200	5.00	3.97	11.5	0.00	16.57	184	2.1	
1120	8.00	200	4.99	3.89	11.85	0.00	16.62	188	2.0	
1125	8.00	200	4.97	3.88	11.32	0.00	16.62	191	2.0	
	Sample VOCs, Hardness, Total metals, Perchlorate @ 1125									
			* 90 min purge time limit reached							

SIGNATURE(S): _____

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC GW 2015
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-110B
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4/17/15								
Time: 1240								ORP
Method: peri pump	Clear	8.66	7.56	18.63	9.63	0.00	4.2	-80

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4/17/15								
Method: peri pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge data sheet						
Total Well Depth (TD): —								
Static Water Level (WL): 2.31								
One Casing Volume(gal/L): —								
Start Purge (hrs): 1140								
End Purge (hrs): 1240								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): ~4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	NaHSO4	1-500 mL amber	✓
Total Metals	HNO3	1-500 mL plastic	✓
Perchlorate	—	1-250 mL plastic	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112IC06247

WELL ID.: MRC-MW-110B-041715
DATE: 4/17/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1140	2.37	–	–	–	–	–	–	–	–	
1145	2.78	300	11.19	15.1	41.1	0.38	18.43	-188	8.8	
1150	2.78	300	11.49	15.3	25.1	0.23	18.40	-164	8.9	
1155	2.78	300	11.30	13.7	19.0	0.05	18.21	-149	7.8	
1200	2.78	300	10.68	11.4	20.4	0.00	18.31	-111	6.5	
1205	2.78	300	10.30	10.9	17.7	0.00	18.55	-90	6.1	
1210	2.78	300	9.97	10.3	13.9	0.00	18.65	-68	5.8	
1215	2.78	300	9.71	9.17	13.2	0.00	18.68	-51	5.1	
1220	2.78	300	9.54	8.71	11.9	0.00	18.63	-41	4.8	
1225	2.78	300	9.38	8.41	12.48	0.00	18.64	-32	4.7	
1230	2.78	300	9.12	8.10	9.67	0.00	18.57	-28	4.5	
1235	2.78	300	8.79	7.72	11.24	0.00	18.61	-79	4.3	
1240	2.78	300	8.66	7.56	9.63	0.00	18.63	-80	4.2	
	Sample VOCs, 1-4 dioxy, Total Metals, Perch @ 1240									

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

Sample ID No.: MRC-MW-111A-05151
Sample Location: MW-111A
Sampled By: MP
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[X] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-18-15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 0926								
Method: Peristaltic pump	Clear	6.05	0.452	20.80	0.0	0.01	0.2	-61

PURGE DATA:

Date: 5-19-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0-0								
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD):		See low flow purge						
Static Water Level (WL): 7.50								
One Casing Volume(gal/L):		Data Sheet						
Start Purge (hrs): 0835								
End Purge (hrs): 0921								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml vials	✓
1,4 Dioxane	NaHSO4	2 - 500 ml Ambers	—

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Matt Pe

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Central
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-111A-051815
DATE: 5-18-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0835	7.58	—	—	—	—	—	—	—	—	Initial, no odor
0836	7.65	300	6.05	0.542	420	1.20	21.84	-46	0.3	cloudy water
0841	7.75	250	6.14	0.514	294	0.41	21.14	-64	0.2	↓
0846	7.85	250	6.17	0.500	154	0.18	20.37	-77	0.2	↓
0851	8.20	150	6.12	0.402	39.2	0.09	20.29	-72	0.2	↓
0906	8.40	100	6.07	0.459	10.9	0.04	20.54	-64	0.2	clean water
0911	8.45	100	6.05	0.454	0.0	0.02	20.59	-63	0.2	↓
0916	8.47	100	6.06	0.453	0.0	0.01	20.71	-62	0.2	↓
0921	8.49	100	6.05	0.452	0.0	0.01	20.80	-61	0.2	↓
				Well parameters Stabilized						
				Sampling Begins						

SIGNATURE(S): Walt Pa

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112JC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW 111B-051815
Sample Location: MW 111B
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 5-18-15								
Time: 1035								
Method: Peristaltic pump	Clear	5.82	0.392	19.92	0.0	0.00	0.2	ORP -26

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 5-18-15								
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow purge					
Total Well Depth (TD):								
Static Water Level (WL): 11.10			Data sheet					
One Casing Volume(gal/L):								
Start Purge (hrs): 0944								
End Purge (hrs): 1030								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
1,4 Dioxane	Na2S2O3	2 - 500 ml Ambers	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—		Walt R

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-111B-051815
DATE: 5-18-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0944	11.10	—	—	—	—	—	—	—	—	Initial, no odor
0945	11.70	300	5.60	0.337	29.2	0.45	21.46	-16	0.2	Slightly cloudy
0950	11.75	150	5.75	0.340	27.4	0.26	21.14	-25	0.2	↓
0955	11.83	100	5.80	0.362	11.9	0.14	20.53	-28	0.2	↓
1005	12.03	100	5.81	0.396	0.0	0.03	19.53	-29	0.2	Clear water
1015	12.10	100	5.81	0.401	0.0	0.00	19.85	-28	0.2	↓
1020	12.15	100	5.83	0.396	0.0	0.00	19.55	-27	0.2	↓
1025	12.20	100	5.83	0.394	0.0	0.00	19.54	-25	0.2	↓
1030	12.25	100	5.82	0.392	0.0	0.00	19.52	-26	0.2	↓
				Well parameters Stabilized						
					Sampling Begins					

SIGNATURE(S): Matt Pa

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Complex
Project No.: 112IC06247

Sample ID No.: MRC-MW-112A-042815
Sample Location: MW-112A
Sampled By: WP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 4-28-15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1453	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: Peristaltic pump	clear	4.84	0.734	15.78	7.00	0.00	0.4	180

PURGE DATA:

Date: 4-28-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC		See low flow purge						
Total Well Depth (TD):								
Static Water Level (WL): 4.45			Data Sheet					
One Casing Volume(gal/L):								
Start Purge (hrs): 1402								
End Purge (hrs): 1448								
Total Purge Time (min): 46								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	✓
Total metals	HNO3	1 - 500 ml Poly	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Walt Pz

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-112A-042815
DATE: 4-28-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1402	4.45	—	—	—	—	—	—	—	—	Initial, no odor
1403	5.00	300	4.76	0.703	30.6	3.26	17.36	188	0.3	Slightly cloudy
1408	4.90	200	4.81	0.727	28.1	0.54	16.77	176	0.4	↓
1413	4.90	200	4.83	0.732	31.0	0.28	16.32	173	0.4	↓
1423	4.90	200	4.83	0.737	30.6	0.08	15.84	173	0.4	↓
1433	4.90	200	4.84	0.736	25.8	0.00	15.81	176	0.4	↓
1438	4.90	200	4.84	0.734	7.10	0.00	15.74	177	0.4	Clean water
1443	4.90	200	4.84	0.736	7.00	0.00	15.71	179	0.4	↓
1448	4.90	200	4.84	0.734	7.00	0.00	15.78	180	0.4	↓
			Well parameters Stabilize							
			Sampling Begins							

SIGNATURE(S): Walt P

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MRC low 2015
Project No.: 112SC06247

Sample ID No.: MRC-MW-113A
Sample Location: MRC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/27/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0950	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: peri. pump	Clear	5.11	0.227	12.38	10.9	1.71	0.1	119

PURGE DATA:

Date: 4/27/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: peri pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): ~16'		See low flow purge data sheet						
Static Water Level (WL): 2.0'								
One Casing Volume(gal/L): –								
Start Purge (hrs): 0900								
End Purge (hrs): 0950								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): ~2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓
1-4 dioxane	Na2S2O3	1-500 mL amber	✓
Perchlorate	–	1-250 mL plastic	✓
PCBs	–	2-1L amber	✓

OBSERVATIONS / NOTES:

MRC

Circle if Applicable:

MS/MSD

Duplicate ID No.: MRC-MW-DUP03-042715

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRC GW 2015
PROJECT NUMBER: 112SC06243

WELL ID.: MRC-MW-113A
DATE: 4/27/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0900	2.00	-	—	—	—	—	—	—	—	
0905	3.25	200	5.08	0.240	30.2	3.08	14.02	170	0.1	
0910	4.41	200	5.12	0.230	28.4	2.53	13.30	140	0.1	
0915	5.30	~~200~~ 150	5.12	0.229	21.1	2.19	12.84	126	0.1	
0920	5.89	150	5.18	0.227	32.3	2.02	12.56	119	0.1	
0925	6.07	150	5.14	0.227	23.5	1.85	12.59	115	0.1	
0930	6.31	150	5.12	0.227	20.7	1.71	12.64	113	0.1	
0935	6.58	150	5.12	0.226	11.8	1.62	12.98	112	0.1	
0940	6.84	150	5.11	0.227	13.3	1.59	12.46	115	0.1	
0945	6.91	150	5.11	0.227	12.3	1.66	12.40	118	0.1	
0950	6.98	150	5.11	0.227	10.9	1.71	12.38	119	0.1	
	Sample VOCs, 1-4 dioxane, Perchlorate, RCRA 8 @ 0950									
	* MRC-MW-DUP03-042715 *									

SIGNATURE(S): _____

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: LMC Middle River
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-114A-041415
Sample Location: MRC-MW-114A
Sampled By: TG
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/14/15	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1510	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Method: Low flow	clear	5.13	0.089	11.59	5.2	1.23	0.0	154

PURGE DATA:

Date: 4/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low flow								
Monitor Reading (ppm):								
Well Casing Diameter & Material Type:								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1417								
End Purge (hrs): 1510								
Total Purge Time (min): 53								
Total Vol. Purged (gal/L): 3.91								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PCBs (680)	None	2 x 1L ambers	2
1,4 Dioxane (5270)	Na_2HSO_4	1 x 500mL amber	1
VOCs (8260)	HCl	3 x 40mL Vials	3

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: LMC Middle River
PROJECT NUMBER: 112IC06247
WELL ID.: MRC-MW-114A-041415
DATE: 4/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1417	2.27									Begin Purging
1427	3.33	300	4.67	0.078	12.5	3.10	11.78	243	0.0	
1436	3.43		4.72	0.079	11.6	1.97	11.67	234	0.0	
1443	3.50	240	4.88	0.082	14.3	1.70	11.64	212	0.0	
1449	3.56		5.00	0.084	11.6	1.54	11.64	193	0.0	
1 1455	3.63	240	5.14	0.087	6.4	1.46	11.62	170	0.0	
2 1500	3.65		5.12	0.088	5.8	1.36	11.62	164	0.0	
3 1505	3.69	240	5.12	0.089	5.4	1.27	11.60	159	0.0	
1510	3.73		5.13	0.089	5.2	1.23	11.59	154	0.0	Begin Sampling
1522										Sampling Complete

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: MLC GW 2015
Project No.: 112IC06247

Sample ID No.: MLC-MW-115A
Sample Location: MLC
Sampled By: JAM
C.O.C. No.:

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/14/15	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other ORP
Time: 1015								
Method: low flow	clear	6.63	1.74	17.03	7.59	6.31	0.9	-39

PURGE DATA:

Date: 5/14/15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: low flow								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC								
Total Well Depth (TD): -		See Low Flow PURGE DATA SHEET						
Static Water Level (WL): 6.70								
One Casing Volume(gal/L): -								
Start Purge (hrs): 0930								
End Purge (hrs): 1015								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): ~2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3-40 mL vials	✓

OBSERVATIONS / NOTES:

QC: If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: MRL GW 2015
PROJECT NUMBER: 117IC06247

WELL ID.: MRL-MW-115A
DATE: 5/14/15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0930	6.70	-	-	-	-	-	-	-	-	
0935	7.55	200	6.11	1.61	409	3.28	16.19	186	0.8	
0940	8.25	150	6.44	1.69	36.1	2.47	17.40	48	0.9	
0945	8.90	150	6.54	1.71	21.5	2.05	17.14	3	0.9	
0950	9.80	150	6.58	1.74	9.13	1.74	17.04	-18	0.9	
0955	10.20	150	6.59	1.64	8.82	1.73	17.05	-23	0.9	
1000	10.90	150	6.61	1.73	6.24	1.50	17.03	-29	0.9	
1005	11.70	150	6.63	1.74	8.11	1.47	17.01	-34	0.9	
1010	12.25	150	6.63	1.74	7.95	1.38	17.00	-37	0.9	
1015	12.75	150	6.63	1.74	7.59	1.31	17.03	-39	0.9	
		Sample	VOCs @	1015						

SIGNATURE(S): _____

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Middle River Center
Project No.: 112IC06247

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: MRC-MW-116A-042215
Sample Location: MW-116A
Sampled By: MP
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-22-15 / Time: 1536 / Method: Peristaltic pump	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other

PURGE DATA:

Date: 4-22-15	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See low flow purge					
Total Well Depth (TD):								
Static Water Level (WL): 5.30			Data sheet					
One Casing Volume(gal/L):								
Start Purge (hrs): 1415								
End Purge (hrs): 1531								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOCs	HCl	3 - 40 ml VOA	

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Middle River Center
PROJECT NUMBER: 112EC06247
WELL ID.: mrec - mw - 116A - 042215
DATE: 4-22-15

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1415	5.30	—	—	—	—	—	—	—	—	Initial, no odor
1416	5.50	300	7.51	0.630	26	1.68	18.05	172	0.3	Slightly cloudy
1421	6.60	300	7.52	0.622	16	0.95	16.79	171	0.3	↓
1426	7.40	150	7.58	0.616	11	0.65	16.05	167	0.3	↓
1436	8.60	100	7.63	0.612	9.2	0.57	15.28	132	0.3	Clean water
1446	9.60	100	7.64	0.611	3.6	0.56	14.90	-11	0.3	↓
1456	10.65	100	7.62	0.606	0.0	0.53	14.58	-55	0.3	↓
1506	11.60	100	7.59	0.607	0.0	0.49	14.50	-48	0.3	↓
1516	12.60	100	7.53	0.601	0.0	0.41	14.34	-60	0.3	↓
1521	12.63	100	7.50	0.559	0.0	0.39	14.38	-47	0.3	↓
1526	12.65	100	7.49	0.554	0.0	0.40	14.32	-49	0.3	↓
1531	12.67	100	7.48	0.559	0.0	0.40	14.30	-47	0.3	

SIGNATURE(S): Walt Pl

APPENDIX C—DATA-VALIDATION REPORTS

TETRA TECH INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **AUGUST 14, 2015**

FROM: **LEIGH A. CIOFANI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DISSOLVED GASES**
LOCKHEED-MRC – FULL REVIEW
SAMPLE DELIVERY GROUP (SDG) 240-53120-1

SAMPLES: 3 / Aqueous /

MRC-MW-24A-051315 MRC-MW-25A-051315 MRC-MW-48A-051315

OVERVIEW

The sample set for Lockheed-MRC, SDG 240-53120-1, consists of three (3) aqueous environmental samples. Samples were analyzed for dissolved gases (methane, ethane, and ethane). No field duplicate pairs are included in this SDG.

The samples were collected by Tetra Tech, Inc. on May 12 and 13, 2015 and analyzed by Test America, Inc. Analyses were conducted in accordance to SW-846 Methods 8260C (VOCs), 6010C (iron), 7470A (mercury), 6020A (other metals), 6850 (perchlorate), and 9060A (total organic carbon), and RSK-157 (dissolved gases), EPA Method 522 (1,4-dioxane), A2320 (alkalinity), 300.0 (anions), 365.3 (orthophosphate), 4500 NH3 C-1997 (ammonia), and SM2540C (total dissolved solids) analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method blank results, surrogate spike recoveries, laboratory control sample results, compound quantitation, and detection limits. Areas of concern with respect to data quality are listed below.

MAJOR PROBLEMS

- None.

MINOR PROBLEMS

- The laboratory control sample (LCS) 240-189404/5 associated with batch 240-189404 had percent recoveries (%Rs) greater than the laboratory quality control limits for methane, ethane, and ethene affecting all samples analyzed on 07/16/15. The laboratory reanalyzed the samples with LCS 240-189672/5 (batch 240-189672) on 07/18/15, and all %Rs for this LCS were within quality control limits. The laboratory reported the following results from the analysis on 07/16/15: ethane in MRC-SWMW-1I-071315, ethane in MRC-SWMW-2I-071315, and ethane and ethene in MRC-SWMW-4S-071315. All other results were reported from the 07/18/15 analysis. Detected results reported from the 07/16/15 analysis (batch 240-189404) were qualified as estimated (J). Non-detected results were not qualified because they are not affected by high LCS %Rs.

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

NOTES

The laboratory case narrative states that insufficient sample volume was available to perform matrix spike

(MS)/matrix spike duplicate (MSD) analyses. No action was taken.

Non-detected results were reported to the MDL.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Several detected results were qualified due to LCS recovery noncompliance.

Other Factors Affecting Data Quality: Detected results reported below the RL but above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the USEPA National Functional Guidelines for Organic Data Review (June 2008). The text of this report has been formulated to address only those problem areas affecting data quality.

Leigh A. Ciofani

Tetra Tech
Leigh A. Ciofani
Environmental Scientist/Data Validator

Joseph A. Samchuck

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 06247	NSAMPLE	MRC-SWMW-1I-071315			MRC-SWMW-2I-071315			MRC-SWMW-4S-071315		
SDG: 240-53120-1	LAB_ID	240-53120-1			240-53120-2			240-53120-3		
FRACTION: OVG	SAMP_DATE	7/13/2015			7/13/2015			7/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		0.23	J	EP	0.48	J	EP	0.49	J	EP
ETHENE		1.7			0.82			0.13	U	
METHANE		130			110			43		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-1I-071315 | Lab Sample ID: 240-53120-1

Matrix: Water | Lab File ID: Z0071608.D

Analysis Method: RSK-175 | Date Collected: 07/13/2015 09:45

Sample wt/vol: 33(mL) | Date Analyzed: 07/16/2015 16:29

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ID:

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 189404 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-84-0	Ethane	0.23	J *	0.50	0.14

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	108		66-132

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-1I-071315 Lab Sample ID: 240-53120-1

Matrix: Water Lab File ID: Z0071807.D

Analysis Method: RSK-175 Date Collected: 07/13/2015 09:45

Sample wt/vol: 33(mL) Date Analyzed: 07/18/2015 16:23

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189672 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	130		0.50	0.080
74-85-1	Ethene	1.7		0.50	0.13

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	108		66-132

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-2I-071315 Lab Sample ID: 240-53120-2

Matrix: Water Lab File ID: Z0071609.D

Analysis Method: RSK-175 Date Collected: 07/13/2015 09:55

Sample wt/vol: 33(mL) Date Analyzed: 07/16/2015 16:44

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189404 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-84-0	Ethane	0.48	J *	0.50	0.14

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	109		66-132

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-2I-071315 Lab Sample ID: 240-53120-2

Matrix: Water Lab File ID: Z0071808.D

Analysis Method: RSK-175 Date Collected: 07/13/2015 09:55

Sample wt/vol: 33(mL) Date Analyzed: 07/18/2015 16:39

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189672 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	110		0.50	0.080
74-85-1	Ethene	0.82		0.50	0.13

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	110		66-132

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-4S-071315 Lab Sample ID: 240-53120-3

Matrix: Water Lab File ID: Z0071610.D

Analysis Method: RSK-175 Date Collected: 07/13/2015 10:15

Sample wt/vol: 33(mL) Date Analyzed: 07/16/2015 17:00

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189404 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-84-0	Ethane	0.49	J *	0.50	0.14
74-85-1	Ethene	0.13	U *	0.50	0.13

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	108		66-132

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: MRC-SWMW-4S-071315 Lab Sample ID: 240-53120-3

Matrix: Water Lab File ID: Z0071809.D

Analysis Method: RSK-175 Date Collected: 07/13/2015 10:15

Sample wt/vol: 33(mL) Date Analyzed: 07/18/2015 16:55

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189672 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	43		0.50	0.080

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	107		66-132

APPENDIX C

SUPPORT DOCUMENTATION

J.8103.8

Chain of Custody Record

016160

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Chris Pike	Site Contact: Sta Cameron	Date: 7-13-15	COC No:
Company Name: Tetra Tech	Tel/Fax:	Lab Contact:	Carrier:	1 of 1 COCs
Address: 20251 Century Blvd Ste 200	Analysis Turnaround Time			Sampler: S. Cameron
City/State/Zip: Germantown MD 20874	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (301) 528-5552	TAT if different from Below 5day			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Block G GW Remedy	☐ 1 week			
Site: Block G, MRC, MD	☐ 2 days			Job / SDG No.:
PO # 112I104776	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Methane, Ethane, Ethene	Sample Specific Notes:
MRC-SWMW-1I-071315	7-13-15	0945	G	AQ	3	N	N	X	
MRC-SWMW-2I-071315	↓	0955	G	AQ	3	N	N	X	
MRC-SWMW-4S-071315	↓	1015	G	AQ	3	N	N	X	

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Preservation Used: 1= Ice, (2= HCl); 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments: 5 day TAT

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company: Tetra Tech	Date/Time: 7-13-15/1045	Received by:	Company: TestAmerica	Date/Time: 7/13/15 1300
Relinquished by:	Company: TestAmerica	Date/Time: 7/13/15/1430	Received by:	Company: TA	Date/Time: 7-14-15 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 53120

Client Tetra Tech Site Name

Cooler unpacked by:

Cooler Received on 7-14-15 Opened on 7-14-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

IR GUN# A (CF +1.0 °C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 3.8 °C

~~IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~

☐ See Multiple Cooler Form

IR GUN# 8 (CF -1.5 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were custody seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Were sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC432654
12. Were VOAs on the COC? (Yes) No
13. Were air bubbles >6 mm in any VOA vials? Yes (No) NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # Yes (No)

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

CASE NARRATIVE

Client: Tetra Tech, Inc.

Project: Block G GW Remedy

Report Number: 240-53120-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 7/14/2015 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

DISSOLVED GASES

Samples MRC-SWMW-1I-071315 (240-53120-1), MRC-SWMW-2I-071315 (240-53120-2) and MRC-SWMW-4S-071315 (240-53120-3) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 07/16/2015 and 07/18/2015.

The laboratory control sample (LCS) for batch analytical batch 240-189404 recovered outside control limits for multiple analytes:Ethane, Ethene and Methane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batches 240-189404 and 240-189672.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SAMPLE SUMMARY

Client: Tetra Tech, Inc. Job Number: 240-53120-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
240-53120-1	MRC-SWMW-1I-071315	Water	07/13/2015 0945	07/14/2015 1000
240-53120-2	MRC-SWMW-2I-071315	Water	07/13/2015 0955	07/14/2015 1000
240-53120-3	MRC-SWMW-4S-071315	Water	07/13/2015 1015	07/14/2015 1000

METHOD SUMMARY

Client: Tetra Tech, Inc. Job Number: 240-53120-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Dissolved Gases (GC)	TAL CAN	RSK RSK-175	

Lab References:

TAL CAN = TestAmerica Canton

Method References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

DATA REPORTING QUALIFIERS

Client: Tetra Tech, Inc. Job Number: 240-53120-1

Lab Section	Qualifier	Description
GC VOA		
	U	Indicates the analyte was analyzed for but not detected.
	*	LCS or LCSD is outside acceptance limits.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

FORM VIII
GC VOA ANALYTICAL SEQUENCE

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Sample No.: STD3 240-183912/5 Date Analyzed: 06/05/2015 14:41

Instrument ID: ZPID GC Column: ID: ()

Lab File ID (Standard): Z0060505.D Heated Purge: (Y/N) N

Calibration ID: 28874

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				TFE		
				RT #		
INITIAL CALIBRATION SURROGATE				3.33		
UPPER LIMIT				3.38		
LOWER LIMIT				3.28		
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
STD3 240-183912/5 ICRT		06/05/2015 14:41	Z0060505.D	3.33		
ICV 240-183912/9		06/05/2015 15:44	Z0060509.D	3.33		

TFE = 1,1,1-Trifluoroethane

TFE RT Limit = ± 0.05 minutes of surrogate RT

Column used to flag values outside QC limits

FORM VIII RSK-175

FORM VIII
GC VOA ANALYTICAL SEQUENCE

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Sample No.: CCVRT 240-189404/3 Date Analyzed: 07/16/2015 15:11

Instrument ID: ZPID GC Column: ID: ()

Lab File ID (Standard): Z0071603.D Heated Purge: (Y/N) N

Calibration ID: 28874

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				TFE		
				RT #		
CONTINUING CALIBRATION SURROGATE				3.33		
UPPER LIMIT				3.38		
LOWER LIMIT				3.28		
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
CCVRT 240-189404/3		07/16/2015 15:11	Z0071603.D	3.33		
MB 240-189404/4		07/16/2015 15:26	Z0071604.D	3.33		
LCS 240-189404/5		07/16/2015 15:42	Z0071605.D	3.33		
240-53120-1	MRC-SWMW-1I-071315	07/16/2015 16:29	Z0071608.D	3.33		
240-53120-2	MRC-SWMW-2I-071315	07/16/2015 16:44	Z0071609.D	3.33		
240-53120-3	MRC-SWMW-4S-071315	07/16/2015 17:00	Z0071610.D	3.33		
CCV 240-189404/14		07/16/2015 18:03	Z0071614.D	3.33		

TFE = 1,1,1-Trifluoroethane

TFE RT Limit = ± 0.05 minutes of surrogate RT

Column used to flag values outside QC limits

FORM VIII RSK-175

FORM VIII
GC VOA ANALYTICAL SEQUENCE

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Sample No.: CCVRT 240-189672/3 Date Analyzed: 07/18/2015 15:21

Instrument ID: ZPID GC Column: ID: ()

Lab File ID (Standard): Z0071803.D Heated Purge: (Y/N) N

Calibration ID: 28874

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				TFE		
				RT #		
CONTINUING CALIBRATION SURROGATE				3.33		
UPPER LIMIT				3.38		
LOWER LIMIT				3.28		
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
CCVRT 240-189672/3		07/18/2015 15:21	Z0071803.D	3.33		
MB 240-189672/4		07/18/2015 15:36	Z0071804.D	3.33		
LCS 240-189672/5		07/18/2015 15:52	Z0071805.D	3.33		
240-53120-1	MRC-SWMW-1I-071315	07/18/2015 16:23	Z0071807.D	3.33		
240-53120-2	MRC-SWMW-2I-071315	07/18/2015 16:39	Z0071808.D	3.33		
240-53120-3	MRC-SWMW-4S-071315	07/18/2015 16:55	Z0071809.D	3.33		
CCV 240-189672/14		07/18/2015 18:13	Z0071814.D	3.33		

TFE = 1,1,1-Trifluoroethane

TFE RT Limit = ± 0.05 minutes of surrogate RT

Column used to flag values outside QC limits

FORM VIII RSK-175

FORM VI
GC VOA INITIAL CALIBRATION DATA
EXTERNAL STANDARD RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1 Analy Batch No.: 183912

SDG No.:

Instrument ID: ZPID GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 06/05/2015 14:10 Calibration End Date: 06/05/2015 15:28 Calibration ID: 28874

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD1 240-183912/3	Z0060503.D
Level 2	STD2 240-183912/4	Z0060504.D
Level 3	STD3 240-183912/5	Z0060505.D
Level 4	STD4 240-183912/6	Z0060506.D
Level 5	STD5 240-183912/7	Z0060507.D
Level 6	STD6 240-183912/8	Z0060508.D

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6					RT WINDOW	AVG RT
Methane	1.180	1.179	1.177	1.180	1.177	1.177					1.127 - 1.227	1.178
Ethene	1.873	1.872	1.871	1.874	1.871	1.867					1.821 - 1.921	1.871
Acetylene	1.986	1.986	1.984	1.984	1.984	1.980					1.934 - 2.034	1.984
Ethane	2.193	2.192	2.194	2.194	2.191	2.184					1.991 - 2.391	2.191
Propane	4.536	4.536	4.537	4.537	4.531	4.510					4.484 - 4.584	4.531
1,1,1-Trifluoroethane	3.333	3.332	3.331	3.327	3.317						3.231 - 3.431	3.328

FORM VI
GC VOA INITIAL CALIBRATION DATA
EXTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-53120-1 Analy Batch No.: 183912

SDG No.:

Instrument ID: ZPID GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 06/05/2015 14:10 Calibration End Date: 06/05/2015 15:28 Calibration ID: 28874

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD1 240-183912/3	Z0060503.D
Level 2	STD2 240-183912/4	Z0060504.D
Level 3	STD3 240-183912/5	Z0060505.D
Level 4	STD4 240-183912/6	Z0060506.D
Level 5	STD5 240-183912/7	Z0060507.D
Level 6	STD6 240-183912/8	Z0060508.D

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3	LVL 4		B	M1	M2								
Methane	14616 12172	13134 12217	14045	13481	Ave		13277.4690				7.4		30.0			
Ethene	10194 13157	11785 13477	13241	12715	Ave		12427.9865				10.0		30.0			
Acetylene	1731.2 4835.9	2035.1 5313.8	3491.2	4546.2	Lin1	-3353.2195	5201.84199							0.9980		0.9900
Ethane	10958 14540	12729 14952	13791	13313	Ave		13380.4060				10.7		30.0			
Propane	10369 16060	12553 17117	13872	13251	Ave		13870.0749				17.6		30.0			
1,1,1-Trifluoroethane	7470.7 7245.8	6008.6	3832.8	7570.7	Ave		6425.73911				24.6		30.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
GC VOA INITIAL CALIBRATION DATA
EXTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-53120-1 Analy Batch No.: 183912

SDG No.:

Instrument ID: ZPID GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 06/05/2015 14:10 Calibration End Date: 06/05/2015 15:28 Calibration ID: 28874

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD1 240-183912/3	Z0060503.D
Level 2	STD2 240-183912/4	Z0060504.D
Level 3	STD3 240-183912/5	Z0060505.D
Level 4	STD4 240-183912/6	Z0060506.D
Level 5	STD5 240-183912/7	Z0060507.D
Level 6	STD6 240-183912/8	Z0060508.D

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
		LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Methane	Ave	3777 24278697	26109	139603	1339889	4837858	0.258 1987	1.99	9.94	99.4	397
Ethene	Ave	4626 47037210	41142	231107	2219281	9184568	0.454 3490	3.49	17.5	175	698
Acetylene	Lin1	727 17160242	6574	56388	734286	3123402	0.420 3229	3.23	16.2	162	646
Ethane	Ave	5327 55902068	47599	257842	2489146	10872094	0.486 3739	3.74	18.7	187	748
Propane	Ave	7385 93763538	68774	380012	3629862	17594432	0.712 5478	5.48	27.4	274	1096
1,1,1-Trifluoroethane	Ave	1948705	6269310	9997611	39495855	75601514	261	1043	2608	5217	10434

Curve Type Legend:

Ave = Average
Lin1 = Linear 1/conc

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: ICV 240-183912/9 Calibration Date: 06/05/2015 15:44

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0060509.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methane	Ave	13277	14028		210	199	5.7	30.0
Ethene	Ave	12428	14710		413	349	18.4	30.0
Acetylene	Lin1		4965		309	323	-4.4	30.0
Ethane	Ave	13380	16177		452	374	20.9	30.0
Propane	Ave	13870	17739		699	546	27.9	30.0
1,1,1-Trifluoroethane	Ave	6426	6405		3040	3050	-0.3	30.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: ICV 240-183912/9 Calibration Date: 06/05/2015 15:44

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0060509.D Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Methane	1.18	1.13	1.23
Ethene	1.87	1.82	1.92
Acetylene	1.98	1.93	2.03
Ethane	2.19	1.98	2.38
Propane	4.53	4.46	4.56
1,1,1-Trifluoroethane	3.33	3.23	3.43

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCVRT 240-189404/3 Calibration Date: 07/16/2015 15:11

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071603.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methane	Ave	13277	15472		232	199	16.5	30.0
Ethene	Ave	12428	15672		440	349	26.1	30.0
Acetylene	Lin1		6179		384	323	19.0	30.0
Ethane	Ave	13380	16565		463	374	23.8	30.0
Propane	Ave	13870	17811		703	548	28.4	30.0
1,1,1-Trifluoroethane	Ave	6426	7332		3480	3050	14.1	30.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCVRT 240-189404/3 Calibration Date: 07/16/2015 15:11

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071603.D Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Methane	1.18	1.13	1.23
Ethene	1.87	1.82	1.92
Acetylene	1.99	1.94	2.04
Ethane	2.19	1.99	2.39
Propane	4.54	4.49	4.59
1,1,1-Trifluoroethane	3.33	3.23	3.43

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCV 240-189404/14 Calibration Date: 07/16/2015 18:03

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071614.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methane	Ave	13277	14708		220	199	10.8	30.0
Ethene	Ave	12428	13874		390	349	11.6	30.0
Acetylene	Lin1		4960		309	323	-4.4	30.0
Ethane	Ave	13380	15101		422	374	12.9	30.0
Propane	Ave	13870	15784		623	548	13.8	30.0
1,1,1-Trifluoroethane	Ave	6426	6442		3060	3050	0.3	30.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCV 240-189404/14 Calibration Date: 07/16/2015 18:03

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071614.D Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Methane	1.18	1.13	1.23
Ethene	1.87	1.82	1.92
Acetylene	1.99	1.94	2.04
Ethane	2.19	1.99	2.39
Propane	4.54	4.49	4.59
1,1,1-Trifluoroethane	3.33	3.23	3.43

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCVRT 240-189672/3 Calibration Date: 07/18/2015 15:21

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071803.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methane	Ave	13277	15080		226	199	13.6	30.0
Ethene	Ave	12428	14132		397	349	13.7	30.0
Acetylene	Lin1		5627		350	323	8.4	30.0
Ethane	Ave	13380	14769		413	374	10.4	30.0
Propane	Ave	13870	15331		605	548	10.5	30.0
1,1,1-Trifluoroethane	Ave	6426	7150		3400	3050	11.3	30.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCVRT 240-189672/3 Calibration Date: 07/18/2015 15:21

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071803.D Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Methane	1.18	1.13	1.23
Ethene	1.87	1.82	1.92
Acetylene	1.99	1.94	2.04
Ethane	2.19	1.99	2.39
Propane	4.54	4.49	4.59
1,1,1-Trifluoroethane	3.33	3.23	3.43

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCV 240-189672/14 Calibration Date: 07/18/2015 18:13

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071814.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methane	Ave	13277	14660		219	199	10.4	30.0
Ethene	Ave	12428	13111		368	349	5.5	30.0
Acetylene	Lin1		5295		329	323	2.0	30.0
Ethane	Ave	13380	14075		393	374	5.2	30.0
Propane	Ave	13870	14357		567	548	3.5	30.0
1,1,1-Trifluoroethane	Ave	6426	6617		3140	3050	3.0	30.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: CCV 240-189672/14 Calibration Date: 07/18/2015 18:13

Instrument ID: ZPID Calib Start Date: 06/05/2015 14:10

GC Column: ID: Calib End Date: 06/05/2015 15:28

Lab File ID: Z0071814.D Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Methane	1.18	1.13	1.23
Ethene	1.87	1.82	1.92
Acetylene	1.98	1.93	2.03
Ethane	2.19	1.99	2.39
Propane	4.54	4.49	4.59
1,1,1-Trifluoroethane	3.33	3.23	3.43

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: MB 240-189404/4

Matrix: Water Date Extracted:

Lab File ID:(1) Z0071604.D Lab File ID:(2)

Date Analyzed:(1) 07/16/2015 15:26 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) ID: GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-189404/5	07/16/2015 15:42	
MRC-SWMW-1I-071315	240-53120-1	07/16/2015 16:29	
MRC-SWMW-2I-071315	240-53120-2	07/16/2015 16:44	
MRC-SWMW-4S-071315	240-53120-3	07/16/2015 17:00	

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-189404/4

Matrix: Water Lab File ID: Z0071604.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 33(mL) Date Analyzed: 07/16/2015 15:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189404 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	0.080	U	0.50	0.080
74-84-0	Ethane	0.14	U	0.50	0.14
74-85-1	Ethene	0.13	U	0.50	0.13

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	116		66-132

FORM III
GC VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Matrix: Water Level: Low Lab File ID: Z0071605.D

Lab ID: LCS 240-189404/5 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Methane	199	251	126	76-120	*
Ethane	374	489	131	80-120	*
Ethene	349	465	133	81-120	*

Column to be used to flag recovery and RPD values

FORM III RSK-175

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Lab Sample ID: MB 240-189672/4

Matrix: Water Date Extracted:

Lab File ID:(1) Z0071804.D Lab File ID:(2)

Date Analyzed:(1) 07/18/2015 15:36 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) ID: GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-189672/5	07/18/2015 15:52	
MRC-SWMW-1I-071315	240-53120-1	07/18/2015 16:23	
MRC-SWMW-2I-071315	240-53120-2	07/18/2015 16:39	
MRC-SWMW-4S-071315	240-53120-3	07/18/2015 16:55	

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-189672/4

Matrix: Water Lab File ID: Z0071804.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 33(mL) Date Analyzed: 07/18/2015 15:36

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ID:

% Moisture: Level: (low/med) Low

Analysis Batch No.: 189672 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	0.080	U	0.50	0.080
74-84-0	Ethane	0.14	U	0.50	0.14
74-85-1	Ethene	0.13	U	0.50	0.13

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	112		66-132

FORM III
GC VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Matrix: Water Level: Low Lab File ID: Z0071805.D

Lab ID: LCS 240-189672/5 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Methane	199	228	115	76-120	
Ethane	374	419	112	80-120	
Ethene	349	402	115	81-120	

Column to be used to flag recovery and RPD values

FORM III RSK-175

FORM II
GC VOA SURROGATE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-53120-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): ID:

Client Sample ID	Lab Sample ID	TFE1 #
MRC-SWMW-1I-071315	240-53120-1	108
MRC-SWMW-1I-071315	240-53120-1	108
MRC-SWMW-2I-071315	240-53120-2	109
MRC-SWMW-2I-071315	240-53120-2	110
MRC-SWMW-4S-071315	240-53120-3	108
MRC-SWMW-4S-071315	240-53120-3	107
	MB 240-189404/4	116
	MB 240-189672/4	112
	LCS 240-189404/5	110
	LCS 240-189672/5	109

	QC LIMITS
TFE = 1,1,1-Trifluoroethane	66-132

Column to be used to flag recovery values

FORM II RSK-175

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- VOC / METALS**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2068377R

SAMPLES: 2/Aqueous/VOC

MRC-MW-88B-05-115 TB-050115

2/Aqueous/Metals

MRC-MW-46A-050115 MRC-MW-61A-050115

Overview

The sample set for Lockheed- MRC, SDG 2068377R consists of three (3) aqueous environmental samples and a trip blank. One (1) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Two (2) aqueous environmental samples were analyzed for metals. There is no field duplicate pair included in this SDG.

The samples were collected on May 1, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, and 7470A analytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation and detection limits.

Areas of concern with respect to data quality are listed below.

Minor Problems

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Contamination was detected in the laboratory method blank associated with batch 2173978.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Carbon disulfide	0.41	2.05
1,4-dichlorobenzene	0.33	1.65

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. No action was taken on the nondetected carbon disulfide and 1,4-dichlorobenzene results.

Molybdenum was detected in the initial calibration blank analyzed on May 5, 2015 @ 00:02 and the continuing calibration blank analyzed at 01:03. The maximum concentration detected was 0.0012 ug/L. Molybdenum was reported in the analyses run at 2:27 and 2:30 on May 5, 2015. The continuing calibration blanks bracketing these samples did not contain molybdenum. No action was taken.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The Trip Blank contained bromomethane. The detected bromomethane result was qualified due to trip blank contamination.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech
for Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-46A-050115			MRC-MW-61A-050115		
SDG: 2068377R	LAB_ID	2068377004			2068377002		
FRACTION: M	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0031			0.00074	U	
ARSENIC		0.001	U		0.0019	J	P
BARIUM		0.14			0.89		
BERYLLIUM		0.00044	J	P	0.018		
CADMIUM		0.00037	U		0.0019		
CHROMIUM		0.0015	J	P	0.0017	J	P
COBALT		0.012			0.85		
COPPER		0.0086			0.015		
IRON		0.2			0.11		
LEAD		0.00074	U		0.0044		
MANGANESE		0.058			17.1		
MERCURY		0.00017	U		0.00017	U	
MOLYBDENUM		0.0018	J	P	0.00074	U	
NICKEL		0.025			0.48		
SELENIUM		0.0019	U		0.0054	J	P
SILVER		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U	
VANADIUM		0.0022	J	P	0.0008	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-88B-050115			TB-050115		
SDG: 2068377R	LAB_ID	2068377003			2068377001		
FRACTION: OV	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U	
2-BUTANONE		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U	
BROMOMETHANE		0.45	U	B	0.53	J	P
CARBON DISULFIDE		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-88B-050115			TB-050115		
SDG: 2068377R	LAB_ID	2068377003			2068377001		
FRACTION: OV	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U	
TRICHLOROETHENE		0.66	J	P	0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377001** Date Collected: 5/1/2015 19:45 Matrix: Water

Sample ID: **TB-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 22:13	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:13	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 22:13	CJG	A
Bromomethane	0.53J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 22:13	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 22:13	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 22:13	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:13	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 22:13	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 22:13	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 22:13	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:13	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 22:13	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:13	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:13	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 22:13	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:13	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:13	CJG	A

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377001** Date Collected: 5/1/2015 19:45 Matrix: Water

Sample ID: **TB-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 22:13	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:13	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:13	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 22:13	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 22:13	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 22:13	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:13	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:13	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 22:13	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.7		%	62 - 133	SW846 8260C		5/6/15 22:13	CJG	A
4-Bromofluorobenzene (S)	87.8		%	79 - 114	SW846 8260C		5/6/15 22:13	CJG	A
Dibromofluoromethane (S)	86.5		%	78 - 116	SW846 8260C		5/6/15 22:13	CJG	A
Toluene-d8 (S)	97.5		%	76 - 127	SW846 8260C		5/6/15 22:13	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377002** Date Collected: 5/1/2015 09:00 Matrix: Water

Sample ID: **MRC-MW-61A-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Arsenic, Total	0.0019J	J	mg/L	0.0030	0.0010	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Barium, Total	0.89		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Beryllium, Total	0.018		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Cadmium, Total	0.0019		mg/L	0.0011	0.00037	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Chromium, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Cobalt, Total	0.85		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Copper, Total	0.015		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Iron, Total	0.11		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 13:33	SRT	A3
Lead, Total	0.0044		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Manganese, Total	17.1		mg/L	0.028	0.0095	SW846 6020A	5/4/15	AAM	5/5/15 03:07	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:24	MNP	A2
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Nickel, Total	0.48		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Selenium, Total	0.0054J	J	mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Vanadium, Total	0.00080J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377003** Date Collected: 5/1/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-88B-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 23:04	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:04	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 23:04	CJG	A
Bromomethane	0.45J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 23:04	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 23:04	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 23:04	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:04	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 23:04	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 23:04	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 23:04	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:04	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 23:04	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:04	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:04	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 23:04	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:04	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:04	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377003** Date Collected: 5/1/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-88B-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 23:04	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:04	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:04	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 23:04	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 23:04	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 23:04	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:04	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Trichloroethene	0.66J	J	ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:04	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 23:04	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260C		5/6/15 23:04	CJG	A
4-Bromofluorobenzene (S)	89.1		%	79 - 114	SW846 8260C		5/6/15 23:04	CJG	A
Dibromofluoromethane (S)	90.4		%	78 - 116	SW846 8260C		5/6/15 23:04	CJG	A
Toluene-d8 (S)	97.7		%	76 - 127	SW846 8260C		5/6/15 23:04	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377004** Date Collected: 5/1/2015 13:15 Matrix: Water

Sample ID: **MRC-MW-46A-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	0.0031		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Barium, Total	0.14		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Beryllium, Total	0.00044J	J	mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Chromium, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Cobalt, Total	0.012		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Copper, Total	0.0086		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Iron, Total	0.20		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 13:45	SRT	A3
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Manganese, Total	0.058		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:25	MNP	A2
Molybdenum, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Nickel, Total	0.025		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Vanadium, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-028

Sample Management

This report contains the results of the analysis of four (4) water samples collected on May 1, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 1, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Two (2) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2173978, carbon disulfide was detected at 0.41J µg/L; 1,4-dichlorobenzene was detected at 0.33J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2173980 and 2173981, was prepared from project sample MRC-MW-88B-050115 (2068377003). Results for precision and accuracy were within control limits.

Internal Standards. All internal standard results met method criteria.

Total Metals by SW-846 Method 6020A

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the ICB and CCB analyzed at 00:02 and 01:03 at 0.0012 J mg/L and 0.0009 J mg/L respectively.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Two (2) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE

* 2 0 6 8 3 7 7 *

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech 20251 Century Blvd. Ste. 200 Germantown, MD 20874	
Phone #: 410 279 2700	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and C.

PRESERVATIVE: 1 2

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP: VOCs (8260C)	GC/MS SVOAs ◦ 8270 ◦ 625: Total Mercury (7470A)	GC VOAs ◦ 8021 ◦ 601/602	PESTICIDES ◦ 8081 ◦ 608	PCBs ◦ 8082 ◦ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
TB-050115		5/1/15	—	Aq	3	X							
MRC-MW-6A-050115		5/1/15	0900	Aq	1		X						
MRC-MW-88B-050115		5/1/15	1020	Aq	3	X							
~~MRC-MW-93A-050115~~					~~4~~	~~X~~	~~X~~						
MRC-MW-46A-050115		5/1/15	1315	Aq	1		X						

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Therm ID: 291
Ship Carrier:
FedEx UPS
DHL
Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS
Metals
* SEE SCOPE FOR METALS LIST
# SAMPLES GO TO MIDDLETOWN, PA LAB

Rmk 5/2 0002

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Josh Mullis	Printed Name: Harrison P	Printed Name: Harrison P	Printed Name	Printed Name	Printed Name
Firm: Tetra Tech	Firm	Firm	Firm	Firm	Firm
Date/Time: 5/1/15 1530	Date/Time: 5/1/15 1530	Date/Time: 5/1/15 1945	Date/Time: 5/1 1945	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2068377 TMM028|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2068377001	TB-050115	Water	5/1/2015 19:45	5/1/2015 19:45	Collected by Client
2068377002	MRC-MW-61A-050115	Water	5/1/2015 09:00	5/1/2015 19:45	Collected by Client
2068377003	MRC-MW-88B-050115	Water	5/1/2015 10:20	5/1/2015 19:45	Collected by Client
2068377004	MRC-MW-46A-050115	Water	5/1/2015 13:15	5/1/2015 19:45	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-028

Lab File ID: 15050650.D BFB Injection Date: 5/6/2015

Instrument ID: ms15.i BFB Injection Time: 17:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.8
175	5.0 - 9.0% of mass 174	5.8 (7.3) 1
176	95.0 - 101.0% of mass 174	75.9 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15050653.D	5/6/2015	18:13
1234	1234	15050654.D	5/6/2015	18:30
1235	1235	15050655.D	5/6/2015	18:48
1236	1236	15050656.D	5/6/2015	19:05
1237	1237	15050657.D	5/6/2015	19:22
1238	1238	15050658.D	5/6/2015	19:39
1239	1239	15050659.D	5/6/2015	19:56
2173978(MB)	2173978	15050663.D	5/6/2015	21:05
2173979(LCS)	2173979	15050664.D	5/6/2015	21:22
TB-050115	2068377001	15050667.D	5/6/2015	22:13
MRC-MW-88B-050115	2068377003	15050670.D	5/6/2015	23:04
MRC-MW-88B-05...MS	2173980	15050674.D	5/7/2015	00:13
MRC-MW-88B-0...MSD	2173981	15050675.D	5/7/2015	00:30

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	1487496			L	0.000000	55.562489		0.99972
Acrolein	0.03828	0.04603		A		0.038880		8.43794
Acrylonitrile	0.09559	0.10188		A		0.094500		4.84620
Acetonitrile	1974485			L	0.000000	41.937870		0.99803
tert-Amyl Ethylether	8552003	12224		Q	0.000000	0.387160	0.020030	0.99999
tert-Amyl methyl ether	11223846	15157		L	0.000000	1.509960		0.99497
tert-Amyl Alcohol	1261596	1579		Q	0.000000	0.010370	0.000150	0.99996
Benzene	0.92262	1.40154		A		1.219140		12.05685
Benzyl Chloride				Q	0.000000	0.099450	0.024470	0.99967
Bromobenzene	0.95110	0.80106		A		0.886540		6.72760
Bromochloromethane	0.14709	0.20028		A		0.166260		10.79593
Bromodichloromethane	0.40396	0.37793		A		0.367110		5.84639
Bromoform *	0.48813	0.33204		A		0.383280		14.65896
Bromomethane	2050088			L	0.000000	8.103020		0.99728
2-Butanone	0.03653			A		0.033140		7.18044
tert.- Butyl Alcohol	0.01932			A		0.017690		9.06431
tert-Butylbenzene	4642215	3868		Q	0.000000	0.688690	0.009870	0.99995
n-Butylbenzene	4906962			Q	0.000000	0.713050	0.012760	0.99993
sec-Butylbenzene	16063735	17046		Q	-0.267280	4.665220	-0.300370	0.99814
Carbon Disulfide	0.65080	0.74826		A		0.620950		10.96066
Carbon Tetrachloride	0.37573	0.33355		A		0.350230		4.03841
Chloroacetonitrile	739616			Q	0.000000	0.016550	0.000180	0.99988
Chlorobenzene *	2.04001	2.37875		A		2.204260		7.32791
1-Chlorobutane	0.27771	0.31060		A		0.290280		5.40157
Chlorodibromomethane	0.79705	0.61836		A		0.649850		12.05101
Chloroethane	0.16012			A		0.180390		8.30640
2-Chloroethylvinyl ether		71.00000		Q	0.000000	0.002100	0.001130	0.99952
Chloroform **	9028784	49185		L	0.000000	1.824750		0.99969
1-Chlorohexane	6864326	6871		L	0.000000	0.985690		0.99409
Chloromethane *	5425849			L	0.000000	3.037050		0.99954
Chloroprene	0.42001	0.48584		A		0.412460		8.68095
3-Chloro-1-propene	0.24646	0.34853		A		0.273070		13.54156
o-Chlorotoluene	2.60631	2.21453		A		2.534890		12.30947
p-Chlorotoluene	14110231	15830		Q	0.000000	2.912310	-0.091910	0.99956
Cyclohexane	0.42766	0.32991		A		0.393730		8.46357
1,2-Dibromo-3-Chloropropane	828598	1155		Q	0.000000	0.095440	0.005890	0.99996

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.67905	0.66635		A		0.605060		8.25662
Dibromomethane	0.18178	0.20731		A		0.183750		7.79907
trans-1,4-Dichloro-2-butene	1335426	832		Q	0.000000	0.176960	0.005990	0.99990
1,2-Dichlorobenzene	1.74573	1.62186		A		1.658720		3.01129
1,3-Dichlorobenzene	1.81859	1.57616		A		1.723130		4.78628
1,4-Dichlorobenzene	1.83424	2.01043		A		1.876950		5.32592
Dichlorodifluoromethane	4848952			L	0.000000	3.397030		0.99959
1,1-Dichloroethane *		0.72538		A		0.585610		14.10649
1,2-Dichloroethene, Total	11862157	30886		L	0.000000	2.795550		0.99956
1,2-Dichloroethane	0.36755	0.44716		A		0.397980		9.74642
1,1-Dichloroethene **	5336933	15733		L	0.000000	3.090710		0.99986
cis-1,2-Dichloroethene	0.40488	0.47415		A		0.407690		9.06038
trans-1,2-Dichloroethene	5210063	15512		L	0.000000	3.167850		0.99984
Dichlorofluoromethane	7551750	22300		L	0.000000	2.182690		0.99985
1,1-Dichloro-2-Propanone	479650			Q	0.000000	0.010550	0.000120	0.99993
2,2-Dichloropropane	0.35920	0.34952		A		0.327160		6.77379
1,3-Dichloropropane	1.22249	1.13681		A		1.122740		4.78504
1,2-Dichloropropane **	0.31960	0.35014		A		0.313080		5.71048
1,1-Dichloropropene	0.41431	0.41389		A		0.398760		3.40432
cis-1,3-Dichloropropene	8231315	10015		Q	0.000000	0.897100	0.054120	0.99996
trans-1,3-Dichloropropene	7237259	7110		Q	0.000000	0.812440	0.043970	0.99998
1,3-Dichloropropene, Total	15468574	17125		L	0.000000	0.879600		0.99224
Diisobutylene	10831379	72367		L	0.000000	1.530470		0.99945
Diisopropyl ether	0.79384	0.90312		A		0.820840		4.79358
1,4-Dioxane	1399691			Q	0.000000	0.002800	0.000001	0.99997
Ethyl Acetate	0.23822	0.20713		A		0.216300		6.45785
Ethyl ether	0.15706	0.20420		A		0.164750		12.16900
Ethyl Methacrylate	6663493	5615		Q	0.000000	0.734110	0.042580	0.99993
Ethyl tert-butyl ether	0.75888	0.72254		A		0.685950		7.36936
Ethylbenzene **	1.18268	0.98979		A		1.050100		8.45052
Freon 113	0.20818	0.25052		A		0.235100		12.64637
Heptane	3274130	2764		L	0.000000	5.076210		0.99920
Hexachlorobutadiene	0.43929	0.47725		A		0.441570		10.20987
Hexachloroethane	0.58726	0.53095		A		0.497390		12.48600
Hexane	0.38529	0.42727		A		0.401740		7.57373
2-Hexanone	12919854	13417		L	0.000000	2.554440		0.99946

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14912343	16186		Q	0.000000	3.603130	-0.175140	0.99854
1,3,5-Trimethylbenzene	14769233	15047		Q	0.000000	3.492000	-0.162190	0.99888
Vinyl Acetate	1076799	1354		Q	0.000000	0.055210	0.001550	0.99999
Vinyl Chloride **	5003913			L	0.000000	3.328000		0.99895
o-Xylene	9575307	9773		Q	0.000000	1.152210	0.046670	0.99993
mp-Xylene	1.12023	1.00566		A		1.160850		14.29601
4-Bromofluorobenzene		9785		L	0.000000	1.216410		0.99960
Dibromofluoromethane				A		0.307320		8.70339
1,2-Dichloroethane-d4	4970938			L	0.000000	3.315890		0.99971
Toluene-d8				A		2.394470		4.81125

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2173978

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-028

Lab File ID: 15050663.D Lab Sample ID: 2173978

Date Analyzed: 5/6/2015 Time Analyzed: 21:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2173979(LCS)	2173979	15050664.D	21:22
TB-050115	2068377001	15050667.D	22:13
MRC-MW-88B-050115	2068377003	15050670.D	23:04
MRC-MW-88B-05...MS	2173980	15050674.D	00:13
MRC-MW-88B-0...MSD	2173981	15050675.D	00:30

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.33	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-028

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2173978(MB)	87.9	86.3	96.5	95.4	0
02	2173979(LCS)	83.8	80.8	87.7	90.4	0
03	TB-050115	87.8	86.5	97.7	97.5	0
04	MRC-MW-88B-050115	89.1	90.4	103	97.7	0
05	MRC-MW-88B-05...MS	85.7	82.8	89.7	88.4	0
06	MRC-MW-88B-0...MSD	86.0	82.1	88.0	89.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		103	103	(40-151)
Benzene	20.0		20.1	100	(80-124)
Bromochloromethane	20.0		19.3	96.6	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.6	87.8	(70-123)
Bromomethane	20.0		25.7	129	(45-148)
2-Butanone	100		99.4	99.4	(50-152)
Carbon Disulfide	20.0		16.6	83.1	(57-131)
Carbon Tetrachloride	20.0		19.1	95.7	(62-132)
Chlorobenzene	20.0		19.0	94.9	(85-117)
Chlorodibromomethane	20.0		18.0	89.9	(77-122)
Chloroethane	20.0		19.3	96.5	(51-142)
Chloroform	20.0		21.1	105	(78-122)
Chloromethane	20.0		26.2	131	(38-156)
Cyclohexane	20.0		20.3	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.0	95.2	(59-133)
1,2-Dibromoethane	20.0		18.4	91.8	(80-124)
1,2-Dichlorobenzene	20.0		18.8	94.1	(82-118)
1,3-Dichlorobenzene	20.0		19.8	99	(81-118)
1,4-Dichlorobenzene	20.0		18.5	92.6	(81-116)
Dichlorodifluoromethane	20.0		26.1	131	(17-166)
1,1-Dichloroethane	20.0		18.3	91.7	(78-124)
1,2-Dichloroethane	20.0		18.8	94	(70-133)
1,1-Dichloroethene	20.0		19.9	99.4	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	93.9	(78-125)
trans-1,2-Dichloroethen	20.0		21.2	106	(71-122)
1,2-Dichloropropane	20.0		18.8	94.2	(81-127)
cis-1,3-Dichloropropene	20.0		18.3	91.5	(81-121)
trans-1,3-Dichloroprope	20.0		19.6	98	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		495	98.9	(1-280)
Ethylbenzene	20.0		19.8	99	(80-124)
Freon 113	20.0		18.2	90.9	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		19.5	97.4	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90	(69-115)
4-Methyl-2-Pentanone(MI	100		81.6	81.6	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		17.2	86.2	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.7	88.5	(74-135)
Tetrachloroethene	20.0		18.1	90.7	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.1	85.6	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84	(67-123)
1,1,1-Trichloroethane	20.0		18.5	92.4	(66-130)
1,1,2-Trichloroethane	20.0		18.0	89.8	(82-126)
Trichloroethene	20.0		19.3	96.4	(77-124)
Trichlorofluoromethane	20.0		19.4	97	(38-123)
Vinyl Chloride	20.0		23.4	117	(27-138)
o-Xylene	20.0		18.4	92.1	(79-124)
mp-Xylene	40.0		43.8	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
Acetone	100	95.7	95.7	0	40	(40-151)
Benzene	20.0	20.5	103	3	26	(80-124)
Bromochloromethane	20.0	19.2	95.8	4	19	(73-117)
Bromodichloromethane	20.0	18.7	93.4	3	16	(79-126)
Bromoform	20.0	17.0	85.2	5	16	(70-123)
Bromomethane	20.0	25.1	123	8	26	(45-148)
2-Butanone	100	99.7	99.7	4	16	(50-152)
Carbon Disulfide	20.0	17.2	85.9	4	28	(57-131)
Carbon Tetrachloride	20.0	20.4	102	4	17	(62-132)
Chlorobenzene	20.0	19.1	95.5	2	15	(85-117)
Chlorodibromomethane	20.0	17.8	88.8	0	15	(77-122)
Chloroethane	20.0	20.7	103	5	24	(51-142)
Chloroform	20.0	20.9	104	3	16	(78-122)
Chloromethane	20.0	27.8	139	2	27	(38-156)
Cyclohexane	20.0	22.4	112	0	20	(66-130)
1,2-Dibromo-3-chloropropane	20.0	18.8	94.2	0	26	(59-133)
1,2-Dibromoethane	20.0	17.9	89.5	1	19	(80-124)
1,2-Dichlorobenzene	20.0	19.3	96.6	2	15	(82-118)
1,3-Dichlorobenzene	20.0	20.3	102	1	16	(81-118)
1,4-Dichlorobenzene	20.0	19.0	95.2	3	15	(81-116)
Dichlorodifluoromethane	20.0	30.2	151	1	24	(17-166)
1,1-Dichloroethane	20.0	18.3	91.5	2	15	(78-124)
1,2-Dichloroethane	20.0	18.9	94.5	2	19	(70-133)
1,1-Dichloroethene	20.0	21.0	105	3	21	(63-128)
cis-1,2-Dichloroethene	20.0	19.1	95.7	1	21	(78-125)
trans-1,2-Dichloroethene	20.0	21.6	108	3	22	(71-122)
1,2-Dichloropropane	20.0	19.3	96.4	0	15	(81-127)
cis-1,3-Dichloropropene	20.0	17.1	85.3	1	16	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
trans-1,3-Dichloropropene	20.0	18.4	92.1	1	18	(78-126)
1,4-Dioxane	500	464	92.8	7	40	(1-280)
Ethylbenzene	20.0	20.0	100	4	19	(80-124)
Freon 113	20.0	20.2	101	3	26	(50-130)
2-Hexanone	100	82.2	82.2	0	17	(65-154)
Isopropylbenzene	20.0	17.2	85.9	1	18	(73-129)
Methyl acetate	20.0	15.5	77.6	5	18	(70-130)
Methyl cyclohexane	20.0	21.3	107	1	18	(70-130)
Methyl t-Butyl Ether	20.0	17.0	85	3	20	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	80.5	80.5	1	16	(71-146)
Methylene Chloride	20.0	19.5	97.3	5	17	(76-121)
Styrene	20.0	17.8	88.8	2	16	(79-123)
1,1,2,2-Tetrachloroethane	20.0	17.8	89.1	3	16	(74-135)
Tetrachloroethene	20.0	18.5	92.3	5	38	(72-124)
Toluene	20.0	20.9	105	2	20	(80-125)
1,2,3-Trichlorobenzene	20.0	17.4	87.2	5	36	(61-126)
1,2,4-Trichlorobenzene	20.0	16.9	84.3	4	22	(67-123)
1,1,1-Trichloroethane	20.0	19.4	97.2	2	20	(66-130)
1,1,2-Trichloroethane	20.0	17.8	88.9	1	15	(82-126)
Trichloroethene	20.0	20.3	98.4	2	18	(77-124)
Trichlorofluoromethane	20.0	21.6	108	4	23	(38-123)
Vinyl Chloride	20.0	25.8	129	0	40	(27-138)
o-Xylene	20.0	17.8	88.9	1	19	(79-124)
mp-Xylene	40.0	44.5	111	1	21	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments: _____

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-05...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
Acetone	100	0	96.0	96	(40-151)
Benzene	20.0	0	21.1	106	(80-124)
Bromochloromethane	20.0	0	19.9	99.3	(73-117)
Bromodichloromethane	20.0	0	19.2	95.8	(79-126)
Bromoform	20.0	0	18.0	90	(70-123)
Bromomethane	20.0	0.45	27.3	134	(45-148)
2-Butanone	100	0	95.8	95.8	(50-152)
Carbon Disulfide	20.0	0	17.8	89.1	(57-131)
Carbon Tetrachloride	20.0	0	21.3	107	(62-132)
Chlorobenzene	20.0	0	19.4	97	(85-117)
Chlorodibromomethane	20.0	0	17.8	89.2	(77-122)
Chloroethane	20.0	0	21.8	109	(51-142)
Chloroform	20.0	0	21.5	108	(78-122)
Chloromethane	20.0	0	28.2	141	(38-156)
Cyclohexane	20.0	0	22.5	113	(66-130)
1,2-Dibromo-3-chloropropane	20.0	0	18.9	94.4	(59-133)
1,2-Dibromoethane	20.0	0	18.0	90.2	(80-124)
1,2-Dichlorobenzene	20.0	0	19.8	99	(82-118)
1,3-Dichlorobenzene	20.0	0	20.5	103	(81-118)
1,4-Dichlorobenzene	20.0	0	19.7	98.3	(81-116)
Dichlorodifluoromethane	20.0	0	30.6	153	(17-166)
1,1-Dichloroethane	20.0	0	18.6	93.1	(78-124)
1,2-Dichloroethane	20.0	0	19.2	96.1	(70-133)
1,1-Dichloroethene	20.0	0	21.7	108	(63-128)
cis-1,2-Dichloroethene	20.0	0	19.0	94.8	(78-125)
trans-1,2-Dichloroethene	20.0	0	22.3	112	(71-122)
1,2-Dichloropropane	20.0	0	19.2	96.2	(81-127)
cis-1,3-Dichloropropene	20.0	0	16.9	84.3	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-05...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
trans-1,3-Dichloropropene	20.0	0	18.7	93.5	(78-126)
1,4-Dioxane	500	0	434	86.8	(1-280)
Ethylbenzene	20.0	0	20.8	104	(80-124)
Freon 113	20.0	0	20.8	104	(50-130)
2-Hexanone	100	0	82.2	82.2	(65-154)
Isopropylbenzene	20.0	0	17.3	86.4	(73-129)
Methyl acetate	20.0	0	16.4	81.9	(70-130)
Methyl cyclohexane	20.0	0	21.2	106	(70-130)
Methyl t-Butyl Ether	20.0	0	16.6	82.8	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	0	80.0	80	(71-146)
Methylene Chloride	20.0	0	20.5	103	(76-121)
Styrene	20.0	0	18.1	90.6	(79-123)
1,1,2,2-Tetrachloroethane	20.0	0	18.3	91.6	(74-135)
Tetrachloroethene	20.0	0	19.3	96.6	(72-124)
Toluene	20.0	0	21.3	106	(80-125)
1,2,3-Trichlorobenzene	20.0	0	16.6	83.2	(61-126)
1,2,4-Trichlorobenzene	20.0	0	16.3	81.3	(67-123)
1,1,1-Trichloroethane	20.0	0	19.8	99.2	(66-130)
1,1,2-Trichloroethane	20.0	0	18.0	89.9	(82-126)
Trichloroethene	20.0	0.66	20.8	101	(77-124)
Trichlorofluoromethane	20.0	0	22.5	113	(38-123)
Vinyl Chloride	20.0	0	25.7	128	(27-138)
o-Xylene	20.0	0	17.9	89.7	(79-124)
mp-Xylene	40.0	0	44.8	112	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Lab File ID: 15050657.D Date Analyzed: 5/6/2015

Instrument ID: ms15.i Time Analyzed: 19:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	976495	5.913	866637	7.686	2355608	3.910
UPPER LIMIT	1952990	6.413	1733274	8.186	4711216	4.410
LOWER LIMIT	488248	5.413	433319	7.186	1177804	3.410
SAMPLE NO.						
2173978(MB)	752321	5.912	603856	7.686	1965746	3.910
2173979(LCS)	926739	5.913	855915	7.686	2195905	3.910
TB-050115	703143	5.912	556423	7.686	1932404	3.910
MRC-MW-88B-050115	674357	5.913	527568	7.686	1809695	3.910
MRC-MW-88B-05...M	903934	5.913	792855	7.680	2114260	3.910
MRC-MW-88B-0...MS	921077	5.913	818032	7.681	2168424	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

6020 3015
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70825						
2172597	MB for HBN 70825 [MDIG/50655	MB	QC-WAT	5/4/15	45.0	50.0	
2172598	LCS for HBN 70825 [MDIG/50655	LCS	QC-WAT	5/4/15	45.0	50.0	
2068377002	MRC-MW-61A-050115	SAM	WATER	5/4/15	45.0	50.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/4/15	45.0	50.0	

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2333																										
BLK	1.00	2337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2340			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2344			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2348			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2351			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2355			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2358			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0002	✓		X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0006			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0009			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0013			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0017																										
ZZZZZZ	1.00	0020																										
ZZZZZZ	5.00	0024																										
ZZZZZZ	5.00	0028																										
ZZZZZZ	5.00	0031																										
ZZZZZZ	5.00	0035																										
ZZZZZZ	5.00	0039																										
ZZZZZZ	5.00	0042																										
ZZZZZZ	5.00	0046																										
ZZZZZZ	5.00	0049																										
ZZZZZZ	5.00	0053																										
ZZZZZZ	5.00	0056																										
CCV1	1.00	0100			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0103	✓		X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0107			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172597	1.00	0111			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172598	1.00	0114			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0118																										
ZZZZZZ	5.00	0121																										
ZZZZZZ	1.00	0125																										
ZZZZZZ	1.00	0129																										
ZZZZZZ	1.00	0132																										
ZZZZZZ	1.00	0136																										
ZZZZZZ	1.00	0139																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0143																										
CCV2	1.00	0147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0150			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0154			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0158																										
ZZZZZZ	1.00	0201																										
ZZZZZZ	1.00	0205																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	5.00	0212																										
ZZZZZZ	5.00	0216																										
ZZZZZZ	5.00	0219																										
ZZZZZZ	1.00	0223																										
2068377002	1.00	0227			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2068377004	1.00	0230			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV3	1.00	0234			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	0237			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0241			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0252																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0303																										
2068377002	5.00	0307															X											
ZZZZZZ	1.00	0310																										
CCV4	1.00	0314			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	0317			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0321			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0325																										
ZZZZZZ	1.00	0328																										
ZZZZZZ	1.00	0332																										
ZZZZZZ	1.00	0336																										
ZZZZZZ	1.00	0339																										
ZZZZZZ	1.00	0343																										
ZZZZZZ	1.00	0347																										
ZZZZZZ	1.00	0351																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0354																								
ZZZZZZ	1.00	0358																								
ZZZZZZ	1.00	0402																								
ZZZZZZ	1.00	0405																								
ZZZZZZ	1.00	0409																								
ZZZZZZ	1.00	0412																								
ZZZZZZ	1.00	0416																								
ZZZZZZ	1.00	0420																								
ZZZZZZ	1.00	0424																								
ZZZZZZ	1.00	0427																								
ZZZZZZ	10.00	0431																								
ZZZZZZ	10.00	0435																								
ZZZZZZ	1.00	0439																								
ZZZZZZ	1.00	0443																								
ZZZZZZ	1.00	0447																								
ZZZZZZ	1.00	0450																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:33																									
BLK	1.00	23:37					X																				
STANDARD 1	1.00	23:40					X																				
STANDARD 2	1.00	23:44					X																				
STANDARD 3	1.00	23:48					X																				
STANDARD 4	1.00	23:51					X																				
STANDARD 5	1.00	23:55					X																				
ICV	1.00	23:58					X																				
ICB1	1.00	00:02					X																				
LLICV	1.00	00:06					X																				
ICS-A1	1.00	00:09					X																				
ICS-AB1	1.00	00:13					X																				
ZZZZZZ	1.00	00:17																									
ZZZZZZ	1.00	00:20																									
ZZZZZZ	5.00	00:24																									
ZZZZZZ	5.00	00:28																									
ZZZZZZ	5.00	00:31																									
ZZZZZZ	5.00	00:35																									
ZZZZZZ	5.00	00:39																									
ZZZZZZ	5.00	00:42																									
ZZZZZZ	5.00	00:46																									
ZZZZZZ	5.00	00:49																									
ZZZZZZ	5.00	00:53																									
ZZZZZZ	5.00	00:56																									
CCV1	1.00	01:00					X																				
CCB1	1.00	01:03					X																				
LLCCV	1.00	01:07					X																				
2172597	1.00	01:11					X																				
2172598	1.00	01:14					X																				
ZZZZZZ	1.00	01:18																									
ZZZZZZ	5.00	01:21																									

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	01:25																										
ZZZZZZ	1.00	01:29																										
ZZZZZZ	1.00	01:32																										
ZZZZZZ	1.00	01:36																										
ZZZZZZ	1.00	01:39																										
ZZZZZZ	1.00	01:43																										
CCV2	1.00	01:47					X																					
CCB2	1.00	01:50					X																					
LLCCV	1.00	01:54					X																					
ZZZZZZ	1.00	01:58																										
ZZZZZZ	1.00	02:01																										
ZZZZZZ	1.00	02:05																										
ZZZZZZ	1.00	02:08																										
ZZZZZZ	5.00	02:12																										
ZZZZZZ	5.00	02:16																										
ZZZZZZ	5.00	02:19																										
ZZZZZZ	1.00	02:23																										
2068377002	1.00	02:27					X																					
2068377004	1.00	02:30					X																					
CCV3	1.00	02:34					X																					
CCB3	1.00	02:37					X																					
LLCCV	1.00	02:41					X																					
ZZZZZZ	1.00	02:45																										
ZZZZZZ	1.00	02:48																										
ZZZZZZ	1.00	02:52																										
ZZZZZZ	1.00	02:56																										
ZZZZZZ	1.00	02:59																										
ZZZZZZ	1.00	03:03																										
2068377002	5.00	03:07																										
ZZZZZZ	1.00	03:10																										
CCV4	1.00	03:14					X																					

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
CCB4	1.00	03:17					X																					
LLCCV	1.00	03:21					X																					
ZZZZZZ	1.00	03:25																										
ZZZZZZ	1.00	03:28																										
ZZZZZZ	1.00	03:32																										
ZZZZZZ	1.00	03:36																										
ZZZZZZ	1.00	03:39																										
ZZZZZZ	1.00	03:43																										
ZZZZZZ	1.00	03:47																										
ZZZZZZ	1.00	03:51																										
ZZZZZZ	1.00	03:54																										
ZZZZZZ	1.00	03:58																										
ZZZZZZ	1.00	04:02																										
ZZZZZZ	1.00	04:05																										
ZZZZZZ	1.00	04:09																										
ZZZZZZ	1.00	04:12																										
ZZZZZZ	1.00	04:16																										
ZZZZZZ	1.00	04:20																										
ZZZZZZ	1.00	04:24																										
ZZZZZZ	1.00	04:27																										
ZZZZZZ	10.00	04:31																										
ZZZZZZ	10.00	04:35																										
ZZZZZZ	1.00	04:39																										
ZZZZZZ	1.00	04:43																										
ZZZZZZ	1.00	04:47																										
ZZZZZZ	1.00	04:50																										

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Arsenic	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Barium	0.0990	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Beryllium	0.1029	0.1000	103		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cadmium	0.0987	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Chromium	0.1044	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cobalt	0.1035	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Copper	0.1052	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Lead	0.0999	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Manganese	0.1047	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Molybdenum	0.1010	0.1000	101		90 - 110	M	5/4/2015	23:58	B050415C 2
	Nickel	0.1005	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Selenium	0.1017	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Silver	0.1004	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Thallium	0.0989	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Vanadium	0.1067	0.1000	107		90 - 110	M	5/4/2015	23:58	B050415C 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	00:06	B050415C 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/5/2015	00:06	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cobalt	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Copper	0.0055	0.0050	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Nickel	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Selenium	0.0050	0.0050	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	00:06	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1024	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Arsenic	0.1023	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Barium	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Beryllium	0.0976	0.1000	98		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cadmium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cobalt	0.1018	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Copper	0.1025	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Manganese	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Molybdenum	0.1017	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Nickel	0.0986	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Selenium	0.1035	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
	Silver	0.1007	0.1000	101		90 - 110	M	5/5/2015	01:00	B050415C 2
	Thallium	0.1004	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Vanadium	0.1039	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/5/2015	01:07	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Chromium	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:07	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Molybdenum	0.0023	0.0020	115		70 - 130	M	5/5/2015	01:07	B050415C 2
	Nickel	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Selenium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:07	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Vanadium	0.0023	0.0020	115	{	70 - 130	M	5/5/2015	01:07	B050415C 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1012	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Arsenic	0.1026	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Barium	0.0987	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Beryllium	0.1031	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cadmium	0.0991	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Copper	0.1036	0.1000	104		90 - 110	M	5/5/2015	01:47	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:47	B050415C 2
	Manganese	0.1052	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
	Molybdenum	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Nickel	0.0975	0.1000	98		90 - 110	M	5/5/2015	01:47	B050415C 2
	Selenium	0.1009	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Silver	0.1011	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:47	B050415C 2
	Vanadium	0.1047	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	01:54	B050415C 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Chromium	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cobalt	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Selenium	0.0049	0.0050	98		70 - 130	M	5/5/2015	01:54	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	01:54	B050415C 2

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Arsenic	0.1017	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Barium	0.0983	0.1000	98		90 - 110	M	5/5/2015	02:34	B050415C 2
	Beryllium	0.1007	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cadmium	0.0969	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Chromium	0.1024	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cobalt	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Copper	0.1018	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Lead	0.1013	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Manganese	0.1054	0.1000	105		90 - 110	M	5/5/2015	02:34	B050415C 2
	Molybdenum	0.0974	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Nickel	0.0968	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Selenium	0.1011	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Silver	0.1000	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Vanadium	0.1043	0.1000	104		90 - 110	M	5/5/2015	02:34	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	02:41	B050415C 2
	Arsenic	0.0028	0.0030	93		70 - 130	M	5/5/2015	02:41	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	02:41	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Copper	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Manganese	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2
	Nickel	0.0049	0.0050	98		70 - 130	M	5/5/2015	02:41	B050415C 2
	Selenium	0.0054	0.0050	108		70 - 130	M	5/5/2015	02:41	B050415C 2
	Silver	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1072	0.1000	107		90 - 110	M	5/5/2015	03:14	B050415C 2
	Arsenic	0.0998	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Barium	0.0970	0.1000	97		90 - 110	M	5/5/2015	03:14	B050415C 2
	Beryllium	0.0963	0.1000	96		90 - 110	M	5/5/2015	03:14	B050415C 2
	Cadmium	0.1003	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Chromium	0.1014	0.1000	101		90 - 110	M	5/5/2015	03:14	B050415C 2
	Cobalt	0.1009	0.1000	101		90 - 110	M	5/5/2015	03:14	B050415C 2
	Copper	0.1024	0.1000	102		90 - 110	M	5/5/2015	03:14	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	03:14	B050415C 2
	Manganese	0.1043	0.1000	104		90 - 110	M	5/5/2015	03:14	B050415C 2
	Molybdenum	0.0989	0.1000	99		90 - 110	M	5/5/2015	03:14	B050415C 2
	Nickel	0.0953	0.1000	95		90 - 110	M	5/5/2015	03:14	B050415C 2
	Selenium	0.0999	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Silver	0.1004	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Thallium	0.1001	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Vanadium	0.1052	0.1000	105		90 - 110	M	5/5/2015	03:14	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	03:21	B050415C 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Barium	0.0050	0.0050	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	03:21	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Copper	0.0053	0.0050	106		70 - 130	M	5/5/2015	03:21	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	03:21	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	03:21	B050415C 2
	Nickel	0.0049	0.0050	98		70 - 130	M	5/5/2015	03:21	B050415C 2
	Selenium	0.0049	0.0050	98		70 - 130	M	5/5/2015	03:21	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	03:21	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	5/5/2015	03:21	B050415C 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	00:02	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	00:02	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	00:02	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Molybdenum	0.0012	J	0.00070	0.0007	0.0050	M	5/5/2015	00:02	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	00:02	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:03	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:03	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:03	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Molybdenum	0.0009	J	0.00070	0.0007	0.0050	M	5/5/2015	01:03	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:03	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:50	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:50	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:50	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	01:50	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:50	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	02:37	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	02:37	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	02:37	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	02:37	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	02:37	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	03:17	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	03:17	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	03:17	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	03:17	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	03:17	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2172597			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	5/5/2015	01:11	B050415C 2333
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	5/5/2015	01:11	B050415C 2333
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	5/5/2015	01:11	B050415C 2333
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	5/5/2015	01:11	B050415C 2333
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	5/5/2015	01:11	B050415C 2333
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Arsenic	0.0002				-0.00300 - -0.00300	5/5/2015	00:09	B050415C 233
	Barium	0.0003				-0.01000 - -0.01000	5/5/2015	00:09	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Cadmium	0.0008				-0.00100 - -0.00100	5/5/2015	00:09	B050415C 233
	Chromium	0.0006				-0.00400 - -0.00400	5/5/2015	00:09	B050415C 233
	Cobalt	0.0006				-0.00600 - -0.00600	5/5/2015	00:09	B050415C 233
	Copper	0.0010				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Lead	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Manganese	0.0013				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Molybdenum	1.8980	2.00000	95		80 - 120%	5/5/2015	00:09	B050415C 233
	Nickel	0.0006				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Selenium	0.0001				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Silver	0.0004				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Vanadium	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Arsenic	0.0195	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Barium	0.0004				-0.00500 - -0.00500	5/5/2015	00:13	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Cadmium	0.0095	0.01000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Chromium	0.0196	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Cobalt	0.0364	0.04000	91		80 - 120%	5/5/2015	00:13	B050415C 233
	Copper	0.0190	0.02000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Lead	0.0002				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Manganese	0.0204	0.02000	102		80 - 120%	5/5/2015	00:13	B050415C 233
	Molybdenum	1.9141	2.00000	96		80 - 120%	5/5/2015	00:13	B050415C 233
	Nickel	0.0350	0.04000	88		80 - 120%	5/5/2015	00:13	B050415C 233
	Selenium	0.0183	0.02000	92		80 - 120%	5/5/2015	00:13	B050415C 233
	Silver	0.0188	0.02000	94		80 - 120%	5/5/2015	00:13	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Vanadium	0.0406	0.04000	102		80 - 120%	5/5/2015	00:13	B050415C 233

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2172598									
	Antimony	mg/L	0.2220	0.2265		102		80 - 120	M
	Arsenic	mg/L	0.2220	0.2137		96		80 - 120	M
	Barium	mg/L	2.2220	2.1426		96		80 - 120	M
	Beryllium	mg/L	0.2220	0.2109		95		80 - 120	M
	Cadmium	mg/L	0.2220	0.2126		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2194		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2177		98		80 - 120	M
	Copper	mg/L	0.2220	0.2166		98		80 - 120	M
	Lead	mg/L	0.2220	0.2240		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2239		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2297		103		80 - 120	M
	Nickel	mg/L	0.2220	0.2126		96		80 - 120	M
	Selenium	mg/L	0.2220	0.2035		92		80 - 120	M
	Silver	mg/L	0.1110	0.1182		106		80 - 120	M
	Thallium	mg/L	0.2220	0.2170		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2198		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2333												
BLK	BLK	2337	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2340	100		112		100		100		101		101	
STANDARD 2	STANDARD 2	2344	100		98		100		100		100		100	
STANDARD 3	STANDARD 3	2348	102		103		102		102		102		102	
STANDARD 4	STANDARD 4	2351	99		98		100		101		99		101	
STANDARD 5	STANDARD 5	2355	103		111		104		105		103		103	
ICV	ICV	2358	101		97		101		101		100		100	
ICB1	ICB	0002	101		111		101		102		101		102	
LLICV	LLICV	0006	100		98		100		101		100		100	
ICS-A1	ICSA	0009	92		111		95		102		101		104	
ICS-AB1	ICSAB	0013	96		100		97		101		100		103	
CHECK	ZZZZZZ	0017												
CHECK	ZZZZZZ	0020												
2171997	ZZZZZZ	0024												
2171998	ZZZZZZ	0028												
2068070004	ZZZZZZ	0031												
2068070005	ZZZZZZ	0035												
2068070006	ZZZZZZ	0039												
2068297001	ZZZZZZ	0042												
2068298001	ZZZZZZ	0046												
2171999	ZZZZZZ	0049												
2172000	ZZZZZZ	0053												
2068298001P	ZZZZZZ	0056												
CCV1	CCV	0100	107		103		106		106		101		101	
CCB1	CCB	0103	104		101		102		101		98		101	
LLCCV	LLCCV	0107	107		111		106		106		102		103	
2172597	MB for HBN 70825	0111	103		151	*	103		103		100		102	
2172598	LCS for HBN 7082	0114	103		153	*	101		103		98		100	
2068120002	ZZZZZZ	0118												
2068120002L	ZZZZZZ	0121												
2068120002P	ZZZZZZ	0125												
2068120003	ZZZZZZ	0129												
2068120004	ZZZZZZ	0132												
2068120005	ZZZZZZ	0136												
2068120006	ZZZZZZ	0139												
2068120007	ZZZZZZ	0143												
CCV2	CCV	0147	107		106		104		104		97		98	
CCB2	CCB	0150	105		105		102		102		96		97	
LLCCV	LLCCV	0154	105		99		103		102		96		95	
2068120008	ZZZZZZ	0158												
2068120009	ZZZZZZ	0201												
2068120010	ZZZZZZ	0205												
2068120011	ZZZZZZ	0208												

*Ge was not used as an IS for this analytical run.

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068120005	ZZZZZZ	0212												
2068120007	ZZZZZZ	0216												
2068120009	ZZZZZZ	0219												
2068168005	ZZZZZZ	0223												
2068377002	MRC-MW-61A-05011	0227	89		186	*	97		106		108		109	
2068377004	MRC-MW-46A-05011	0230	106		148	*	108		113		107		109	
CCV3	CCV	0234	114		111		113		112		107		109	
CCB3	CCB	0237	112		109		110		109		103		104	
LLCCV	LLCCV	0241	111		107		108		107		103		102	
2067773001	ZZZZZZ	0245												
2067773001S	ZZZZZZ	0248												
2067773001S	ZZZZZZ	0252												
2068256001	ZZZZZZ	0256												
2068256002	ZZZZZZ	0259												
2068256003	ZZZZZZ	0303												
2068377002	MRC-MW-61A-05011	0307	109		117		110		114		110		117	
CHECK	ZZZZZZ	0310												
CCV4	CCV	0314	119		115		115		111		108		117	
CCB4	CCB	0317	118		108		112		110		105		112	
LLCCV	LLCCV	0321	115		107		110		107		106		113	
2067944001	ZZZZZZ	0325												
2172300	ZZZZZZ	0328												
2067905001	ZZZZZZ	0332												
2067924001	ZZZZZZ	0336												
2067924002	ZZZZZZ	0339												
2067924003	ZZZZZZ	0343												
2172303	ZZZZZZ	0347												
2172304	ZZZZZZ	0351												
2067924004	ZZZZZZ	0354												
2067924005	ZZZZZZ	0358												
CCV5	ZZZZZZ	0402												
CCB5	ZZZZZZ	0405												
2068062001	ZZZZZZ	0409												
2068094001	ZZZZZZ	0412												
2068152001	ZZZZZZ	0416												
2068183001	ZZZZZZ	0420												
2068185001	ZZZZZZ	0424												
2068235001	ZZZZZZ	0427												
2068390001	ZZZZZZ	0431												
2068390002	ZZZZZZ	0435												
2068390002	ZZZZZZ	0439												
2172427	ZZZZZZ	0443												
CCV6	ZZZZZZ	0447												
CCB6	ZZZZZZ	0450												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2333												
BLK	2337	100											
STANDARD 1	2340	100											
STANDARD 2	2344	99											
STANDARD 3	2348	102											
STANDARD 4	2351	99											
STANDARD 5	2355	103											
ICV	2358	100											
ICB	0002	101											
LLICV	0006	99											
ICSA	0009	99											
ICSAB	0013	100											
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0028												
ZZZZZZ	0031												
ZZZZZZ	0035												
ZZZZZZ	0039												
ZZZZZZ	0042												
ZZZZZZ	0046												
ZZZZZZ	0049												
ZZZZZZ	0053												
ZZZZZZ	0056												
CCV	0100	108											
CCB	0103	102											
LLCCV	0107	105											
MB for HBN 70825	0111	105											
LCS for HBN 7082	0114	104											
ZZZZZZ	0118												
ZZZZZZ	0121												
ZZZZZZ	0125												
ZZZZZZ	0129												
ZZZZZZ	0132												
ZZZZZZ	0136												
ZZZZZZ	0139												
ZZZZZZ	0143												
CCV	0147	106											
CCB	0150	104											
LLCCV	0154	104											
ZZZZZZ	0158												
ZZZZZZ	0201												
ZZZZZZ	0205												
ZZZZZZ	0208												
ZZZZZZ	0212												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0216												
ZZZZZZ	0219												
ZZZZZZ	0223												
MRC-MW-61A-05011	0227	103											
MRC-MW-46A-05011	0230	110											
CCV	0234	114											
CCB	0237	111											
LLCCV	0241	111											
ZZZZZZ	0245												
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
MRC-MW-61A-05011	0307	116											
ZZZZZZ	0310												
CCV	0314	118											
CCB	0317	116											
LLCCV	0321	112											
ZZZZZZ	0325												
ZZZZZZ	0328												
ZZZZZZ	0332												
ZZZZZZ	0336												
ZZZZZZ	0339												
ZZZZZZ	0343												
ZZZZZZ	0347												
ZZZZZZ	0351												
ZZZZZZ	0354												
ZZZZZZ	0358												
ZZZZZZ	0402												
ZZZZZZ	0405												
ZZZZZZ	0409												
ZZZZZZ	0412												
ZZZZZZ	0416												
ZZZZZZ	0420												
ZZZZZZ	0424												
ZZZZZZ	0427												
ZZZZZZ	0431												
ZZZZZZ	0435												
ZZZZZZ	0439												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0450												

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71519						
2068377002	MRC-MW-61A-050115	SAM	WATER	5/7/15	45.0	50.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/7/15	45.0	50.0	
2174195	MB for HBN 71519 [MDIG/50713	MB	QC-WAT	5/7/15	45.0	50.0	
2174196	LCS for HBN 71519 [MDIG/50713	LCS	QC-WAT	5/7/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0937												X													
ICAL2	1.00	0941												X													
ICAL3	1.00	0945												X													
ICAL4	1.00	0949												X													
ICAL5	1.00	0952												X													
ICV1	1.00	0958												X													
ICB1	1.00	1002												X													
ZZZZZZ	1.00	1009																									
CRDL2	1.00	1013												X													
CCV1	1.00	1016												X													
HIGH	1.00	1020												X													
ICS-A1	1.00	1023												X													
ICS-AB1	1.00	1027												X													
ZZZZZZ	1.00	1033																									
ZZZZZZ	1.00	1036																									
ZZZZZZ	200.00	1040																									
ZZZZZZ	10.00	1043																									
ZZZZZZ	50.00	1047																									
ZZZZZZ	10.00	1051																									
ZZZZZZ	5.00	1055																									
ZZZZZZ	5.00	1059																									
ZZZZZZ	5.00	1102																									
ZZZZZZ	1.00	1106																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1204																									
ZZZZZZ	5.00	1208																									
ZZZZZZ	5.00	1211																									
ZZZZZZ	5.00	1215																									
ZZZZZZ	5.00	1219																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1455																									
CCV6	1.00	1459												X													
CCB6	1.00	1502												X													
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1545																									
ZZZZZZ	1.00	1548																									
ZZZZZZ	2.00	1552																									
ZZZZZZ	1.00	1556																									
ZZZZZZ	1.00	1600																									
ZZZZZZ	1.00	1604																									
ZZZZZZ	1.00	1607																									
ZZZZZZ	1.00	1611																									
CCV8	1.00	1615												X													
CCB8	1.00	1618												X													
LLCCV	1.00	1744												X													
ZZZZZZ	1.00	1747																									
ICS-A3	1.00	1753												X													
ICS-AB3	1.00	1757												X													
ZZZZZZ	1.00	1801																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1223																									
ZZZZZZ	5.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	5.00	1238																									
ZZZZZZ	5.00	1241																									
ZZZZZZ	5.00	1245																									
ZZZZZZ	5.00	1249																									
ZZZZZZ	10.00	1253																									
ZZZZZZ	5.00	1257																									
ZZZZZZ	5.00	1301																									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1312																									
CCV4	1.00	1316											X														
ZZZZZZ	1.00	1319																									
CCB4	1.00	1326											X														
ZZZZZZ	5.00	1329																									
2068377002	1.00	1333											X														
2068377004	1.00	1345											X														
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1411																									
CCV5	1.00	1415											X														
CCB5	1.00	1418											X														
2174195	1.00	1422											X														
2174196	1.00	1426											X														
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1444																									

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- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.942	1.000	94		90 - 110	P	5/8/2015	09:58	050815 3015
CCV	Iron	2.505	2.500	100		90 - 110	P	5/8/2015	10:16	050815 3015
CCV	Iron	2.468	2.500	99		90 - 110	P	5/8/2015	13:16	050815 3015
CCV	Iron	2.489	2.500	100		90 - 110	P	5/8/2015	14:15	050815 3015
CCV	Iron	2.501	2.500	100		90 - 110	P	5/8/2015	14:59	050815 3015
CCV	Iron	2.439	2.500	98		90 - 110	P	5/8/2015	16:15	050815 3015
LLCCV	Iron	0.061	0.060	102		70 - 130	P	5/8/2015	17:44	050815 3015

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- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.067	0.060	112		70 - 130	P	5/8/2015	10:13	050815 301

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	10:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	13:26	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	14:18	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	15:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	16:18	050815 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2174195			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/8/2015	14:22	050815 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	10:23	050815 3015
ICSAB									
	Iron	119.3	125.0	95		80 - 120%	5/8/2015	10:27	050815 3015
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	17:53	050815 3015
ICSAB									
	Iron	115.5	125.0	92		80 - 120%	5/8/2015	17:57	050815 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2174196									
	Iron	mg/L	1.11	1.096		99		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1229																X								
Standard #1 (0.2ppb	1.00	1230																X								
	1.00	1231																X								
	1.00	1232																X								
	1.00	1233																X								
	1.00	1234																X								
ICV1	1.00	1236																X								
ICB1	1.00	1237																X								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1239																								
ZZZZZZ	1.00	1240																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
CCV2	1.00	1301																X								
CCB2	1.00	1302																X								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1306																								
ZZZZZZ	1.00	1307																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1310																									
2173295	1.00	1311																X									
2173296	1.00	1312																X									
ZZZZZZ	1.00	1313																									
CCV3	1.00	1314																X									
CCB3	1.00	1315																X									
ZZZZZZ	1.00	1316																									
ZZZZZZ	1.00	1318																									
ZZZZZZ	1.00	1319																									
ZZZZZZ	1.00	1320																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1323																									
2068377002	1.00	1324																X									
2068377004	1.00	1325																X									
ZZZZZZ	1.00	1326																									
CCV4	1.00	1327																X									
CCB4	1.00	1328																X									
ZZZZZZ	1.00	1330																									
ZZZZZZ	1.00	1331																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1430																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1434																									
ZZZZZZ	1.00	1435																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1438																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1441																									
ZZZZZZ	1.00	1444																									
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1453																									
ZZZZZZ	1.00	1455																									
ZZZZZZ	1.00	1456																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1459																									
ZZZZZZ	50.00	1500																									
ZZZZZZ	50.00	1501																									
ZZZZZZ	50.00	1502																									
ZZZZZZ	50.00	1503																									
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1515																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1518																									
ZZZZZZ	1.00	1519																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1520																										
ZZZZZZ	50.00	1521																										
ZZZZZZ	50.00	1522																										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										

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- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 Method Type: 7470A SOW No.:

Contract: TMM028|112IC06247 Lab Code: CAS Case No.: Lockhee SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/7/2015	12:36	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:01	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:14	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:27	050715W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	12:37	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:02	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:15	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:28	050715W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173295			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/7/2015	13:11	050715W

7470A
- 7 -
LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173296									
	Mercury	mg/L	0.0020	0.0018		90		85 - 115	CV

7470A
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71111						
2173295	MB for HBN 71111 [MDIG/50685	MB	QC-WAT	5/7/15	25.0	25.0	
2173296	LCS for HBN 71111 [MDIG/50685	LCS	QC-WAT	5/7/15	25.0	25.0	
2068377002	MRC-MW-61A-050115	SAM	WATER	5/7/15	25.0	25.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/7/15	25.0	25.0	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JUNE 11, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- VOC / METALS**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2068377R

SAMPLES: 2/Aqueous/VOC

MRC-MW-88B-05-115 TB-050115

2/Aqueous/Metals

MRC-MW-46A-050115 MRC-MW-61A-050115

Overview

The sample set for Lockheed- MRC, SDG 2068377R consists of three (3) aqueous environmental samples and a trip blank. One (1) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Two (2) aqueous environmental samples were analyzed for metals. There is no field duplicate pair included in this SDG.

The samples were collected on May 1, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, and 7470Aanalytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation and detection limits.

Areas of concern with respect to data quality are listed below.

Major Problems

- The initial calibration relative response factor (RRF) for 1,4-dioxane was less than the 0.01 quality control limit in the VOC fraction on May 6, 2015 on instrument ms15.i. The nondetected 1,4-dioxane results were qualified as rejected (UR).

Minor Problems

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Contamination was detected in the laboratory method blank associated with batch 2173978.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Carbon disulfide	0.41	2.05
1,4-dichlorobenzene	0.33	1.65

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. No action was taken on the nondetected carbon disulfide and 1,4-dichlorobenzene results.

Molybdenum was detected in the initial calibration blank analyzed on May 5, 2015 @ 00:02 and the continuing calibration blank analyzed at 01:03. The maximum concentration detected was 0.0012 ug/L. Molybdenum was reported in the analyses run at 2:27 and 2:30 on May 5, 2015. The continuing calibration blanks bracketing these samples did not contain molybdenum. No action was taken.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The RRF of 1,4-dioxane was less than the quality control limit in the VOC fraction.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech
Ann Cognetti
Chemist/Data Validator

Joseph C. Samchuck

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-46A-050115			MRC-MW-61A-050115		
SDG: 2068377R	LAB_ID	2068377004			2068377002		
FRACTION: M	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0031			0.00074	U	
ARSENIC		0.001	U		0.0019	J	P
BARIUM		0.14			0.89		
BERYLLIUM		0.00044	J	P	0.018		
CADMIUM		0.00037	U		0.0019		
CHROMIUM		0.0015	J	P	0.0017	J	P
COBALT		0.012			0.85		
COPPER		0.0086			0.015		
IRON		0.2			0.11		
LEAD		0.00074	U		0.0044		
MANGANESE		0.058			17.1		
MERCURY		0.00017	U		0.00017	U	
MOLYBDENUM		0.0018	J	P	0.00074	U	
NICKEL		0.025			0.48		
SELENIUM		0.0019	U		0.0054	J	P
SILVER		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U	
VANADIUM		0.0022	J	P	0.0008	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-88B-050115			TB-050115		
SDG: 2068377R	LAB_ID	2068377003			2068377001		
FRACTION: OV	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U	
1,4-DIOXANE		58.9	UR	C	58.9	UR	C
2-BUTANONE		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U	
BROMOMETHANE		0.45	J	P	0.53	J	P
CARBON DISULFIDE		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-88B-050115			TB-050115		
SDG: 2068377R	LAB_ID	2068377003			2068377001		
FRACTION: OV	SAMP_DATE	5/1/2015			5/1/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U	
TRICHLOROETHENE		0.66	J	P	0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377001** Date Collected: 5/1/2015 19:45 Matrix: Water

Sample ID: **TB-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 22:13	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:13	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 22:13	CJG	A
Bromomethane	0.53J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 22:13	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 22:13	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 22:13	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:13	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 22:13	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 22:13	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 22:13	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:13	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:13	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:13	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:13	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 22:13	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:13	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:13	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 22:13	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:13	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 22:13	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:13	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377001** Date Collected: 5/1/2015 19:45 Matrix: Water

Sample ID: **TB-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 22:13	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:13	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:13	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 22:13	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:13	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 22:13	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 22:13	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:13	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:13	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:13	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:13	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 22:13	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.7		%	62 - 133	SW846 8260C		5/6/15 22:13	CJG	A
4-Bromofluorobenzene (S)	87.8		%	79 - 114	SW846 8260C		5/6/15 22:13	CJG	A
Dibromofluoromethane (S)	86.5		%	78 - 116	SW846 8260C		5/6/15 22:13	CJG	A
Toluene-d8 (S)	97.5		%	76 - 127	SW846 8260C		5/6/15 22:13	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377002** Date Collected: 5/1/2015 09:00 Matrix: Water

Sample ID: **MRC-MW-61A-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Arsenic, Total	0.0019J	J	mg/L	0.0030	0.0010	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Barium, Total	0.89		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Beryllium, Total	0.018		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Cadmium, Total	0.0019		mg/L	0.0011	0.00037	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Chromium, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Cobalt, Total	0.85		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Copper, Total	0.015		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Iron, Total	0.11		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 13:33	SRT	A3
Lead, Total	0.0044		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Manganese, Total	17.1		mg/L	0.028	0.0095	SW846 6020A	5/4/15	AAM	5/5/15 03:07	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:24	MNP	A2
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Nickel, Total	0.48		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Selenium, Total	0.0054J	J	mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1
Vanadium, Total	0.00080J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:27	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377003** Date Collected: 5/1/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-88B-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 23:04	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:04	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 23:04	CJG	A
Bromomethane	0.45J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 23:04	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 23:04	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 23:04	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:04	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 23:04	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 23:04	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 23:04	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:04	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:04	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:04	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:04	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 23:04	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:04	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:04	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 23:04	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:04	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 23:04	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:04	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377003** Date Collected: 5/1/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-88B-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 23:04	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:04	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:04	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 23:04	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:04	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 23:04	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 23:04	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:04	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Trichloroethene	0.66J	J	ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:04	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:04	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:04	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 23:04	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260C		5/6/15 23:04	CJG	A
4-Bromofluorobenzene (S)	89.1		%	79 - 114	SW846 8260C		5/6/15 23:04	CJG	A
Dibromofluoromethane (S)	90.4		%	78 - 116	SW846 8260C		5/6/15 23:04	CJG	A
Toluene-d8 (S)	97.7		%	76 - 127	SW846 8260C		5/6/15 23:04	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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ANALYTICAL RESULTS

Workorder: 2068377 TMM028|112IC06247

Lab ID: **2068377004** Date Collected: 5/1/2015 13:15 Matrix: Water

Sample ID: **MRC-MW-46A-050115** Date Received: 5/1/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	0.0031		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Barium, Total	0.14		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Beryllium, Total	0.00044J	J	mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Chromium, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Cobalt, Total	0.012		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Copper, Total	0.0086		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Iron, Total	0.20		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 13:45	SRT	A3
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Manganese, Total	0.058		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:25	MNP	A2
Molybdenum, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Nickel, Total	0.025		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1
Vanadium, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:30	ZMC	A1

Debra J Musser

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Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-028

Sample Management

This report contains the results of the analysis of four (4) water samples collected on May 1, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 1, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Two (2) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2173978, carbon disulfide was detected at 0.41J µg/L; 1,4-dichlorobenzene was detected at 0.33J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2173980 and 2173981, was prepared from project sample MRC-MW-88B-050115 (2068377003). Results for precision and accuracy were within control limits.

Internal Standards. All internal standard results met method criteria.

Total Metals by SW-846 Method 6020A

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the ICB and CCB analyzed at 00:02 and 01:03 at 0.0012 J mg/L and 0.0009 J mg/L respectively.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Two (2) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE

* 2 0 6 8 3 7 7 *

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech 20251 Century Blvd. Ste. 200 Germantown, MD 20874	
Phone #: 410 279 2700	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and C.

PRESERVATIVE: 1 2

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP: VOCs (8260C)	GC/MS SVOAs ◦ 8270 ◦ 625: Total Mercury (7470A)	GC VOAs ◦ 8021 ◦ 601/602	PESTICIDES ◦ 8081 ◦ 608	PCBs ◦ 8082 ◦ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
TB-050115		5/1/15	—	Aq	3	X							
MRC-MW-6A-050115		5/1/15	0900	Aq	1		X						
MRC-MW-88B-050115		5/1/15	1020	Aq	3	X							
~~MRC-MW-93A-050115~~					~~4~~	~~X~~	~~X~~						
MRC-MW-46A-050115		5/1/15	1315	Aq	1		X						

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Therm ID: 291
Ship Carrier:
FedEx UPS
DHL
Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS
Metals
* SEE SCOPE FOR METALS LIST
# SAMPLES GO TO MIDDLETOWN, PA LAB

Rmk 5/2 0002

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Josh Mullis	Printed Name: Harrison P	Printed Name: Harrison P	Printed Name	Printed Name	Printed Name
Firm: Tetra Tech	Firm	Firm	Firm	Firm	Firm
Date/Time: 5/1/15 1530	Date/Time: 5/1/15 1530	Date/Time: 5/1/15 1945	Date/Time: 5/1 1945	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2068377 TMM028|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2068377001	TB-050115	Water	5/1/2015 19:45	5/1/2015 19:45	Collected by Client
2068377002	MRC-MW-61A-050115	Water	5/1/2015 09:00	5/1/2015 19:45	Collected by Client
2068377003	MRC-MW-88B-050115	Water	5/1/2015 10:20	5/1/2015 19:45	Collected by Client
2068377004	MRC-MW-46A-050115	Water	5/1/2015 13:15	5/1/2015 19:45	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-028

Lab File ID: 15050650.D BFB Injection Date: 5/6/2015

Instrument ID: ms15.i BFB Injection Time: 17:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.8
175	5.0 - 9.0% of mass 174	5.8 (7.3) 1
176	95.0 - 101.0% of mass 174	75.9 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15050653.D	5/6/2015	18:13
1234	1234	15050654.D	5/6/2015	18:30
1235	1235	15050655.D	5/6/2015	18:48
1236	1236	15050656.D	5/6/2015	19:05
1237	1237	15050657.D	5/6/2015	19:22
1238	1238	15050658.D	5/6/2015	19:39
1239	1239	15050659.D	5/6/2015	19:56
2173978(MB)	2173978	15050663.D	5/6/2015	21:05
2173979(LCS)	2173979	15050664.D	5/6/2015	21:22
TB-050115	2068377001	15050667.D	5/6/2015	22:13
MRC-MW-88B-050115	2068377003	15050670.D	5/6/2015	23:04
MRC-MW-88B-05...MS	2173980	15050674.D	5/7/2015	00:13
MRC-MW-88B-0...MSD	2173981	15050675.D	5/7/2015	00:30

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	1487496			L	0.000000	55.562489		0.99972
Acrolein	0.03828	0.04603		A		0.038880		8.43794
Acrylonitrile	0.09559	0.10188		A		0.094500		4.84620
Acetonitrile	1974485			L	0.000000	41.937870		0.99803
tert-Amyl Ethylether	8552003	12224		Q	0.000000	0.387160	0.020030	0.99999
tert-Amyl methyl ether	11223846	15157		L	0.000000	1.509960		0.99497
tert-Amyl Alcohol	1261596	1579		Q	0.000000	0.010370	0.000150	0.99996
Benzene	0.92262	1.40154		A		1.219140		12.05685
Benzyl Chloride				Q	0.000000	0.099450	0.024470	0.99967
Bromobenzene	0.95110	0.80106		A		0.886540		6.72760
Bromochloromethane	0.14709	0.20028		A		0.166260		10.79593
Bromodichloromethane	0.40396	0.37793		A		0.367110		5.84639
Bromoform *	0.48813	0.33204		A		0.383280		14.65896
Bromomethane	2050088			L	0.000000	8.103020		0.99728
2-Butanone	0.03653			A		0.033140		7.18044
tert.- Butyl Alcohol	0.01932			A		0.017690		9.06431
tert-Butylbenzene	4642215	3868		Q	0.000000	0.688690	0.009870	0.99995
n-Butylbenzene	4906962			Q	0.000000	0.713050	0.012760	0.99993
sec-Butylbenzene	16063735	17046		Q	-0.267280	4.665220	-0.300370	0.99814
Carbon Disulfide	0.65080	0.74826		A		0.620950		10.96066
Carbon Tetrachloride	0.37573	0.33355		A		0.350230		4.03841
Chloroacetonitrile	739616			Q	0.000000	0.016550	0.000180	0.99988
Chlorobenzene *	2.04001	2.37875		A		2.204260		7.32791
1-Chlorobutane	0.27771	0.31060		A		0.290280		5.40157
Chlorodibromomethane	0.79705	0.61836		A		0.649850		12.05101
Chloroethane	0.16012			A		0.180390		8.30640
2-Chloroethylvinyl ether		71.00000		Q	0.000000	0.002100	0.001130	0.99952
Chloroform **	9028784	49185		L	0.000000	1.824750		0.99969
1-Chlorohexane	6864326	6871		L	0.000000	0.985690		0.99409
Chloromethane *	5425849			L	0.000000	3.037050		0.99954
Chloroprene	0.42001	0.48584		A		0.412460		8.68095
3-Chloro-1-propene	0.24646	0.34853		A		0.273070		13.54156
o-Chlorotoluene	2.60631	2.21453		A		2.534890		12.30947
p-Chlorotoluene	14110231	15830		Q	0.000000	2.912310	-0.091910	0.99956
Cyclohexane	0.42766	0.32991		A		0.393730		8.46357
1,2-Dibromo-3-Chloropropane	828598	1155		Q	0.000000	0.095440	0.005890	0.99996

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.67905	0.66635		A		0.605060		8.25662
Dibromomethane	0.18178	0.20731		A		0.183750		7.79907
trans-1,4-Dichloro-2-butene	1335426	832		Q	0.000000	0.176960	0.005990	0.99990
1,2-Dichlorobenzene	1.74573	1.62186		A		1.658720		3.01129
1,3-Dichlorobenzene	1.81859	1.57616		A		1.723130		4.78628
1,4-Dichlorobenzene	1.83424	2.01043		A		1.876950		5.32592
Dichlorodifluoromethane	4848952			L	0.000000	3.397030		0.99959
1,1-Dichloroethane *		0.72538		A		0.585610		14.10649
1,2-Dichloroethene, Total	11862157	30886		L	0.000000	2.795550		0.99956
1,2-Dichloroethane	0.36755	0.44716		A		0.397980		9.74642
1,1-Dichloroethene **	5336933	15733		L	0.000000	3.090710		0.99986
cis-1,2-Dichloroethene	0.40488	0.47415		A		0.407690		9.06038
trans-1,2-Dichloroethene	5210063	15512		L	0.000000	3.167850		0.99984
Dichlorofluoromethane	7551750	22300		L	0.000000	2.182690		0.99985
1,1-Dichloro-2-Propanone	479650			Q	0.000000	0.010550	0.000120	0.99993
2,2-Dichloropropane	0.35920	0.34952		A		0.327160		6.77379
1,3-Dichloropropane	1.22249	1.13681		A		1.122740		4.78504
1,2-Dichloropropane **	0.31960	0.35014		A		0.313080		5.71048
1,1-Dichloropropene	0.41431	0.41389		A		0.398760		3.40432
cis-1,3-Dichloropropene	8231315	10015		Q	0.000000	0.897100	0.054120	0.99996
trans-1,3-Dichloropropene	7237259	7110		Q	0.000000	0.812440	0.043970	0.99998
1,3-Dichloropropene, Total	15468574	17125		L	0.000000	0.879600		0.99224
Diisobutylene	10831379	72367		L	0.000000	1.530470		0.99945
Diisopropyl ether	0.79384	0.90312		A		0.820840		4.79358
1,4-Dioxane	1399691			Q	0.000000	0.002800	0.000001	0.99997
Ethyl Acetate	0.23822	0.20713		A		0.216300		6.45785
Ethyl ether	0.15706	0.20420		A		0.164750		12.16900
Ethyl Methacrylate	6663493	5615		Q	0.000000	0.734110	0.042580	0.99993
Ethyl tert-butyl ether	0.75888	0.72254		A		0.685950		7.36936
Ethylbenzene **	1.18268	0.98979		A		1.050100		8.45052
Freon 113	0.20818	0.25052		A		0.235100		12.64637
Heptane	3274130	2764		L	0.000000	5.076210		0.99920
Hexachlorobutadiene	0.43929	0.47725		A		0.441570		10.20987
Hexachloroethane	0.58726	0.53095		A		0.497390		12.48600
Hexane	0.38529	0.42727		A		0.401740		7.57373
2-Hexanone	12919854	13417		L	0.000000	2.554440		0.99946

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-028

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14912343	16186		Q	0.000000	3.603130	-0.175140	0.99854
1,3,5-Trimethylbenzene	14769233	15047		Q	0.000000	3.492000	-0.162190	0.99888
Vinyl Acetate	1076799	1354		Q	0.000000	0.055210	0.001550	0.99999
Vinyl Chloride **	5003913			L	0.000000	3.328000		0.99895
o-Xylene	9575307	9773		Q	0.000000	1.152210	0.046670	0.99993
mp-Xylene	1.12023	1.00566		A		1.160850		14.29601
4-Bromofluorobenzene		9785		L	0.000000	1.216410		0.99960
Dibromofluoromethane				A		0.307320		8.70339
1,2-Dichloroethane-d4	4970938			L	0.000000	3.315890		0.99971
Toluene-d8				A		2.394470		4.81125

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2173978

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-028

Lab File ID: 15050663.D Lab Sample ID: 2173978

Date Analyzed: 5/6/2015 Time Analyzed: 21:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2173979(LCS)	2173979	15050664.D	21:22
TB-050115	2068377001	15050667.D	22:13
MRC-MW-88B-050115	2068377003	15050670.D	23:04
MRC-MW-88B-05...MS	2173980	15050674.D	00:13
MRC-MW-88B-0...MSD	2173981	15050675.D	00:30

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.33	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-028

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2173978(MB)	87.9	86.3	96.5	95.4	0
02	2173979(LCS)	83.8	80.8	87.7	90.4	0
03	TB-050115	87.8	86.5	97.7	97.5	0
04	MRC-MW-88B-050115	89.1	90.4	103	97.7	0
05	MRC-MW-88B-05...MS	85.7	82.8	89.7	88.4	0
06	MRC-MW-88B-0...MSD	86.0	82.1	88.0	89.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		103	103	(40-151)
Benzene	20.0		20.1	100	(80-124)
Bromochloromethane	20.0		19.3	96.6	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.6	87.8	(70-123)
Bromomethane	20.0		25.7	129	(45-148)
2-Butanone	100		99.4	99.4	(50-152)
Carbon Disulfide	20.0		16.6	83.1	(57-131)
Carbon Tetrachloride	20.0		19.1	95.7	(62-132)
Chlorobenzene	20.0		19.0	94.9	(85-117)
Chlorodibromomethane	20.0		18.0	89.9	(77-122)
Chloroethane	20.0		19.3	96.5	(51-142)
Chloroform	20.0		21.1	105	(78-122)
Chloromethane	20.0		26.2	131	(38-156)
Cyclohexane	20.0		20.3	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.0	95.2	(59-133)
1,2-Dibromoethane	20.0		18.4	91.8	(80-124)
1,2-Dichlorobenzene	20.0		18.8	94.1	(82-118)
1,3-Dichlorobenzene	20.0		19.8	99	(81-118)
1,4-Dichlorobenzene	20.0		18.5	92.6	(81-116)
Dichlorodifluoromethane	20.0		26.1	131	(17-166)
1,1-Dichloroethane	20.0		18.3	91.7	(78-124)
1,2-Dichloroethane	20.0		18.8	94	(70-133)
1,1-Dichloroethene	20.0		19.9	99.4	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	93.9	(78-125)
trans-1,2-Dichloroethen	20.0		21.2	106	(71-122)
1,2-Dichloropropane	20.0		18.8	94.2	(81-127)
cis-1,3-Dichloropropene	20.0		18.3	91.5	(81-121)
trans-1,3-Dichloroprope	20.0		19.6	98	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		495	98.9	(1-280)
Ethylbenzene	20.0		19.8	99	(80-124)
Freon 113	20.0		18.2	90.9	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		19.5	97.4	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90	(69-115)
4-Methyl-2-Pentanone(MI	100		81.6	81.6	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		17.2	86.2	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.7	88.5	(74-135)
Tetrachloroethene	20.0		18.1	90.7	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.1	85.6	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84	(67-123)
1,1,1-Trichloroethane	20.0		18.5	92.4	(66-130)
1,1,2-Trichloroethane	20.0		18.0	89.8	(82-126)
Trichloroethene	20.0		19.3	96.4	(77-124)
Trichlorofluoromethane	20.0		19.4	97	(38-123)
Vinyl Chloride	20.0		23.4	117	(27-138)
o-Xylene	20.0		18.4	92.1	(79-124)
mp-Xylene	40.0		43.8	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
Acetone	100	95.7	95.7	0	40	(40-151)
Benzene	20.0	20.5	103	3	26	(80-124)
Bromochloromethane	20.0	19.2	95.8	4	19	(73-117)
Bromodichloromethane	20.0	18.7	93.4	3	16	(79-126)
Bromoform	20.0	17.0	85.2	5	16	(70-123)
Bromomethane	20.0	25.1	123	8	26	(45-148)
2-Butanone	100	99.7	99.7	4	16	(50-152)
Carbon Disulfide	20.0	17.2	85.9	4	28	(57-131)
Carbon Tetrachloride	20.0	20.4	102	4	17	(62-132)
Chlorobenzene	20.0	19.1	95.5	2	15	(85-117)
Chlorodibromomethane	20.0	17.8	88.8	0	15	(77-122)
Chloroethane	20.0	20.7	103	5	24	(51-142)
Chloroform	20.0	20.9	104	3	16	(78-122)
Chloromethane	20.0	27.8	139	2	27	(38-156)
Cyclohexane	20.0	22.4	112	0	20	(66-130)
1,2-Dibromo-3-chloropropane	20.0	18.8	94.2	0	26	(59-133)
1,2-Dibromoethane	20.0	17.9	89.5	1	19	(80-124)
1,2-Dichlorobenzene	20.0	19.3	96.6	2	15	(82-118)
1,3-Dichlorobenzene	20.0	20.3	102	1	16	(81-118)
1,4-Dichlorobenzene	20.0	19.0	95.2	3	15	(81-116)
Dichlorodifluoromethane	20.0	30.2	151	1	24	(17-166)
1,1-Dichloroethane	20.0	18.3	91.5	2	15	(78-124)
1,2-Dichloroethane	20.0	18.9	94.5	2	19	(70-133)
1,1-Dichloroethene	20.0	21.0	105	3	21	(63-128)
cis-1,2-Dichloroethene	20.0	19.1	95.7	1	21	(78-125)
trans-1,2-Dichloroethene	20.0	21.6	108	3	22	(71-122)
1,2-Dichloropropane	20.0	19.3	96.4	0	15	(81-127)
cis-1,3-Dichloropropene	20.0	17.1	85.3	1	16	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
trans-1,3-Dichloropropene	20.0	18.4	92.1	1	18	(78-126)
1,4-Dioxane	500	464	92.8	7	40	(1-280)
Ethylbenzene	20.0	20.0	100	4	19	(80-124)
Freon 113	20.0	20.2	101	3	26	(50-130)
2-Hexanone	100	82.2	82.2	0	17	(65-154)
Isopropylbenzene	20.0	17.2	85.9	1	18	(73-129)
Methyl acetate	20.0	15.5	77.6	5	18	(70-130)
Methyl cyclohexane	20.0	21.3	107	1	18	(70-130)
Methyl t-Butyl Ether	20.0	17.0	85	3	20	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	80.5	80.5	1	16	(71-146)
Methylene Chloride	20.0	19.5	97.3	5	17	(76-121)
Styrene	20.0	17.8	88.8	2	16	(79-123)
1,1,2,2-Tetrachloroethane	20.0	17.8	89.1	3	16	(74-135)
Tetrachloroethene	20.0	18.5	92.3	5	38	(72-124)
Toluene	20.0	20.9	105	2	20	(80-125)
1,2,3-Trichlorobenzene	20.0	17.4	87.2	5	36	(61-126)
1,2,4-Trichlorobenzene	20.0	16.9	84.3	4	22	(67-123)
1,1,1-Trichloroethane	20.0	19.4	97.2	2	20	(66-130)
1,1,2-Trichloroethane	20.0	17.8	88.9	1	15	(82-126)
Trichloroethene	20.0	20.3	98.4	2	18	(77-124)
Trichlorofluoromethane	20.0	21.6	108	4	23	(38-123)
Vinyl Chloride	20.0	25.8	129	0	40	(27-138)
o-Xylene	20.0	17.8	88.9	1	19	(79-124)
mp-Xylene	40.0	44.5	111	1	21	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments: _____

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-05...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
Acetone	100	0	96.0	96	(40-151)
Benzene	20.0	0	21.1	106	(80-124)
Bromochloromethane	20.0	0	19.9	99.3	(73-117)
Bromodichloromethane	20.0	0	19.2	95.8	(79-126)
Bromoform	20.0	0	18.0	90	(70-123)
Bromomethane	20.0	0.45	27.3	134	(45-148)
2-Butanone	100	0	95.8	95.8	(50-152)
Carbon Disulfide	20.0	0	17.8	89.1	(57-131)
Carbon Tetrachloride	20.0	0	21.3	107	(62-132)
Chlorobenzene	20.0	0	19.4	97	(85-117)
Chlorodibromomethane	20.0	0	17.8	89.2	(77-122)
Chloroethane	20.0	0	21.8	109	(51-142)
Chloroform	20.0	0	21.5	108	(78-122)
Chloromethane	20.0	0	28.2	141	(38-156)
Cyclohexane	20.0	0	22.5	113	(66-130)
1,2-Dibromo-3-chloropropane	20.0	0	18.9	94.4	(59-133)
1,2-Dibromoethane	20.0	0	18.0	90.2	(80-124)
1,2-Dichlorobenzene	20.0	0	19.8	99	(82-118)
1,3-Dichlorobenzene	20.0	0	20.5	103	(81-118)
1,4-Dichlorobenzene	20.0	0	19.7	98.3	(81-116)
Dichlorodifluoromethane	20.0	0	30.6	153	(17-166)
1,1-Dichloroethane	20.0	0	18.6	93.1	(78-124)
1,2-Dichloroethane	20.0	0	19.2	96.1	(70-133)
1,1-Dichloroethene	20.0	0	21.7	108	(63-128)
cis-1,2-Dichloroethene	20.0	0	19.0	94.8	(78-125)
trans-1,2-Dichloroethene	20.0	0	22.3	112	(71-122)
1,2-Dichloropropane	20.0	0	19.2	96.2	(81-127)
cis-1,3-Dichloropropene	20.0	0	16.9	84.3	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Matrix Spike - Sample No: MRC-MW-88B-05...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
trans-1,3-Dichloropropene	20.0	0	18.7	93.5	(78-126)
1,4-Dioxane	500	0	434	86.8	(1-280)
Ethylbenzene	20.0	0	20.8	104	(80-124)
Freon 113	20.0	0	20.8	104	(50-130)
2-Hexanone	100	0	82.2	82.2	(65-154)
Isopropylbenzene	20.0	0	17.3	86.4	(73-129)
Methyl acetate	20.0	0	16.4	81.9	(70-130)
Methyl cyclohexane	20.0	0	21.2	106	(70-130)
Methyl t-Butyl Ether	20.0	0	16.6	82.8	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	0	80.0	80	(71-146)
Methylene Chloride	20.0	0	20.5	103	(76-121)
Styrene	20.0	0	18.1	90.6	(79-123)
1,1,2,2-Tetrachloroethane	20.0	0	18.3	91.6	(74-135)
Tetrachloroethene	20.0	0	19.3	96.6	(72-124)
Toluene	20.0	0	21.3	106	(80-125)
1,2,3-Trichlorobenzene	20.0	0	16.6	83.2	(61-126)
1,2,4-Trichlorobenzene	20.0	0	16.3	81.3	(67-123)
1,1,1-Trichloroethane	20.0	0	19.8	99.2	(66-130)
1,1,2-Trichloroethane	20.0	0	18.0	89.9	(82-126)
Trichloroethene	20.0	0.66	20.8	101	(77-124)
Trichlorofluoromethane	20.0	0	22.5	113	(38-123)
Vinyl Chloride	20.0	0	25.7	128	(27-138)
o-Xylene	20.0	0	17.9	89.7	(79-124)
mp-Xylene	40.0	0	44.8	112	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-028

Lab File ID: 15050657.D Date Analyzed: 5/6/2015

Instrument ID: ms15.i Time Analyzed: 19:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	976495	5.913	866637	7.686	2355608	3.910
UPPER LIMIT	1952990	6.413	1733274	8.186	4711216	4.410
LOWER LIMIT	488248	5.413	433319	7.186	1177804	3.410
SAMPLE NO.						
2173978(MB)	752321	5.912	603856	7.686	1965746	3.910
2173979(LCS)	926739	5.913	855915	7.686	2195905	3.910
TB-050115	703143	5.912	556423	7.686	1932404	3.910
MRC-MW-88B-050115	674357	5.913	527568	7.686	1809695	3.910
MRC-MW-88B-05...M	903934	5.913	792855	7.680	2114260	3.910
MRC-MW-88B-0...MS	921077	5.913	818032	7.681	2168424	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

6020 3015
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70825						
2172597	MB for HBN 70825 [MDIG/50655	MB	QC-WAT	5/4/15	45.0	50.0	
2172598	LCS for HBN 70825 [MDIG/50655	LCS	QC-WAT	5/4/15	45.0	50.0	
2068377002	MRC-MW-61A-050115	SAM	WATER	5/4/15	45.0	50.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/4/15	45.0	50.0	

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2333																										
BLK	1.00	2337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2340			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2344			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2348			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2351			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2355			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2358			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0002	✓		X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0006			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0009			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0013			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0017																										
ZZZZZZ	1.00	0020																										
ZZZZZZ	5.00	0024																										
ZZZZZZ	5.00	0028																										
ZZZZZZ	5.00	0031																										
ZZZZZZ	5.00	0035																										
ZZZZZZ	5.00	0039																										
ZZZZZZ	5.00	0042																										
ZZZZZZ	5.00	0046																										
ZZZZZZ	5.00	0049																										
ZZZZZZ	5.00	0053																										
ZZZZZZ	5.00	0056																										
CCV1	1.00	0100			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0103	✓		X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0107			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172597	1.00	0111			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172598	1.00	0114			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0118																										
ZZZZZZ	5.00	0121																										
ZZZZZZ	1.00	0125																										
ZZZZZZ	1.00	0129																										
ZZZZZZ	1.00	0132																										
ZZZZZZ	1.00	0136																										
ZZZZZZ	1.00	0139																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0143																										
CCV2	1.00	0147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0150			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0154			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0158																										
ZZZZZZ	1.00	0201																										
ZZZZZZ	1.00	0205																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	5.00	0212																										
ZZZZZZ	5.00	0216																										
ZZZZZZ	5.00	0219																										
ZZZZZZ	1.00	0223																										
2068377002	1.00	0227			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2068377004	1.00	0230			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV3	1.00	0234			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	0237			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0241			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0252																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0303																										
2068377002	5.00	0307															X											
ZZZZZZ	1.00	0310																										
CCV4	1.00	0314			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	0317			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0321			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0325																										
ZZZZZZ	1.00	0328																										
ZZZZZZ	1.00	0332																										
ZZZZZZ	1.00	0336																										
ZZZZZZ	1.00	0339																										
ZZZZZZ	1.00	0343																										
ZZZZZZ	1.00	0347																										
ZZZZZZ	1.00	0351																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0354																								
ZZZZZZ	1.00	0358																								
ZZZZZZ	1.00	0402																								
ZZZZZZ	1.00	0405																								
ZZZZZZ	1.00	0409																								
ZZZZZZ	1.00	0412																								
ZZZZZZ	1.00	0416																								
ZZZZZZ	1.00	0420																								
ZZZZZZ	1.00	0424																								
ZZZZZZ	1.00	0427																								
ZZZZZZ	10.00	0431																								
ZZZZZZ	10.00	0435																								
ZZZZZZ	1.00	0439																								
ZZZZZZ	1.00	0443																								
ZZZZZZ	1.00	0447																								
ZZZZZZ	1.00	0450																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:33																									
BLK	1.00	23:37					X																				
STANDARD 1	1.00	23:40					X																				
STANDARD 2	1.00	23:44					X																				
STANDARD 3	1.00	23:48					X																				
STANDARD 4	1.00	23:51					X																				
STANDARD 5	1.00	23:55					X																				
ICV	1.00	23:58					X																				
ICB1	1.00	00:02					X																				
LLICV	1.00	00:06					X																				
ICS-A1	1.00	00:09					X																				
ICS-AB1	1.00	00:13					X																				
ZZZZZZ	1.00	00:17																									
ZZZZZZ	1.00	00:20																									
ZZZZZZ	5.00	00:24																									
ZZZZZZ	5.00	00:28																									
ZZZZZZ	5.00	00:31																									
ZZZZZZ	5.00	00:35																									
ZZZZZZ	5.00	00:39																									
ZZZZZZ	5.00	00:42																									
ZZZZZZ	5.00	00:46																									
ZZZZZZ	5.00	00:49																									
ZZZZZZ	5.00	00:53																									
ZZZZZZ	5.00	00:56																									
CCV1	1.00	01:00					X																				
CCB1	1.00	01:03					X																				
LLCCV	1.00	01:07					X																				
2172597	1.00	01:11					X																				
2172598	1.00	01:14					X																				
ZZZZZZ	1.00	01:18																									
ZZZZZZ	5.00	01:21																									

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	01:25																										
ZZZZZZ	1.00	01:29																										
ZZZZZZ	1.00	01:32																										
ZZZZZZ	1.00	01:36																										
ZZZZZZ	1.00	01:39																										
ZZZZZZ	1.00	01:43																										
CCV2	1.00	01:47					X																					
CCB2	1.00	01:50					X																					
LLCCV	1.00	01:54					X																					
ZZZZZZ	1.00	01:58																										
ZZZZZZ	1.00	02:01																										
ZZZZZZ	1.00	02:05																										
ZZZZZZ	1.00	02:08																										
ZZZZZZ	5.00	02:12																										
ZZZZZZ	5.00	02:16																										
ZZZZZZ	5.00	02:19																										
ZZZZZZ	1.00	02:23																										
2068377002	1.00	02:27					X																					
2068377004	1.00	02:30					X																					
CCV3	1.00	02:34					X																					
CCB3	1.00	02:37					X																					
LLCCV	1.00	02:41					X																					
ZZZZZZ	1.00	02:45																										
ZZZZZZ	1.00	02:48																										
ZZZZZZ	1.00	02:52																										
ZZZZZZ	1.00	02:56																										
ZZZZZZ	1.00	02:59																										
ZZZZZZ	1.00	03:03																										
2068377002	5.00	03:07																										
ZZZZZZ	1.00	03:10																										
CCV4	1.00	03:14					X																					

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM028|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-028

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
CCB4	1.00	03:17					X																					
LLCCV	1.00	03:21					X																					
ZZZZZZ	1.00	03:25																										
ZZZZZZ	1.00	03:28																										
ZZZZZZ	1.00	03:32																										
ZZZZZZ	1.00	03:36																										
ZZZZZZ	1.00	03:39																										
ZZZZZZ	1.00	03:43																										
ZZZZZZ	1.00	03:47																										
ZZZZZZ	1.00	03:51																										
ZZZZZZ	1.00	03:54																										
ZZZZZZ	1.00	03:58																										
ZZZZZZ	1.00	04:02																										
ZZZZZZ	1.00	04:05																										
ZZZZZZ	1.00	04:09																										
ZZZZZZ	1.00	04:12																										
ZZZZZZ	1.00	04:16																										
ZZZZZZ	1.00	04:20																										
ZZZZZZ	1.00	04:24																										
ZZZZZZ	1.00	04:27																										
ZZZZZZ	10.00	04:31																										
ZZZZZZ	10.00	04:35																										
ZZZZZZ	1.00	04:39																										
ZZZZZZ	1.00	04:43																										
ZZZZZZ	1.00	04:47																										
ZZZZZZ	1.00	04:50																										

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Arsenic	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Barium	0.0990	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Beryllium	0.1029	0.1000	103		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cadmium	0.0987	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Chromium	0.1044	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cobalt	0.1035	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Copper	0.1052	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Lead	0.0999	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Manganese	0.1047	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Molybdenum	0.1010	0.1000	101		90 - 110	M	5/4/2015	23:58	B050415C 2
	Nickel	0.1005	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Selenium	0.1017	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Silver	0.1004	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Thallium	0.0989	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Vanadium	0.1067	0.1000	107		90 - 110	M	5/4/2015	23:58	B050415C 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	00:06	B050415C 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/5/2015	00:06	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cobalt	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Copper	0.0055	0.0050	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Nickel	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Selenium	0.0050	0.0050	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	00:06	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1024	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Arsenic	0.1023	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Barium	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Beryllium	0.0976	0.1000	98		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cadmium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cobalt	0.1018	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Copper	0.1025	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Manganese	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Molybdenum	0.1017	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Nickel	0.0986	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Selenium	0.1035	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
	Silver	0.1007	0.1000	101		90 - 110	M	5/5/2015	01:00	B050415C 2
	Thallium	0.1004	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Vanadium	0.1039	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/5/2015	01:07	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Chromium	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:07	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Molybdenum	0.0023	0.0020	115		70 - 130	M	5/5/2015	01:07	B050415C 2
	Nickel	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Selenium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:07	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Vanadium	0.0023	0.0020	115	{	70 - 130	M	5/5/2015	01:07	B050415C 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1012	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Arsenic	0.1026	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Barium	0.0987	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Beryllium	0.1031	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cadmium	0.0991	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Copper	0.1036	0.1000	104		90 - 110	M	5/5/2015	01:47	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:47	B050415C 2
	Manganese	0.1052	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
	Molybdenum	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Nickel	0.0975	0.1000	98		90 - 110	M	5/5/2015	01:47	B050415C 2
	Selenium	0.1009	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Silver	0.1011	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:47	B050415C 2
	Vanadium	0.1047	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	01:54	B050415C 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Chromium	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cobalt	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Selenium	0.0049	0.0050	98		70 - 130	M	5/5/2015	01:54	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	01:54	B050415C 2

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Arsenic	0.1017	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Barium	0.0983	0.1000	98		90 - 110	M	5/5/2015	02:34	B050415C 2
	Beryllium	0.1007	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cadmium	0.0969	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Chromium	0.1024	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cobalt	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Copper	0.1018	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Lead	0.1013	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Manganese	0.1054	0.1000	105		90 - 110	M	5/5/2015	02:34	B050415C 2
	Molybdenum	0.0974	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Nickel	0.0968	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Selenium	0.1011	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Silver	0.1000	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Vanadium	0.1043	0.1000	104		90 - 110	M	5/5/2015	02:34	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	02:41	B050415C 2
	Arsenic	0.0028	0.0030	93		70 - 130	M	5/5/2015	02:41	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	02:41	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Copper	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Manganese	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2
	Nickel	0.0049	0.0050	98		70 - 130	M	5/5/2015	02:41	B050415C 2
	Selenium	0.0054	0.0050	108		70 - 130	M	5/5/2015	02:41	B050415C 2
	Silver	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1072	0.1000	107		90 - 110	M	5/5/2015	03:14	B050415C 2
	Arsenic	0.0998	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Barium	0.0970	0.1000	97		90 - 110	M	5/5/2015	03:14	B050415C 2
	Beryllium	0.0963	0.1000	96		90 - 110	M	5/5/2015	03:14	B050415C 2
	Cadmium	0.1003	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Chromium	0.1014	0.1000	101		90 - 110	M	5/5/2015	03:14	B050415C 2
	Cobalt	0.1009	0.1000	101		90 - 110	M	5/5/2015	03:14	B050415C 2
	Copper	0.1024	0.1000	102		90 - 110	M	5/5/2015	03:14	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	03:14	B050415C 2
	Manganese	0.1043	0.1000	104		90 - 110	M	5/5/2015	03:14	B050415C 2
	Molybdenum	0.0989	0.1000	99		90 - 110	M	5/5/2015	03:14	B050415C 2
	Nickel	0.0953	0.1000	95		90 - 110	M	5/5/2015	03:14	B050415C 2
	Selenium	0.0999	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Silver	0.1004	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Thallium	0.1001	0.1000	100		90 - 110	M	5/5/2015	03:14	B050415C 2
	Vanadium	0.1052	0.1000	105		90 - 110	M	5/5/2015	03:14	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	03:21	B050415C 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Barium	0.0050	0.0050	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	03:21	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Copper	0.0053	0.0050	106		70 - 130	M	5/5/2015	03:21	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	03:21	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	03:21	B050415C 2
	Nickel	0.0049	0.0050	98		70 - 130	M	5/5/2015	03:21	B050415C 2
	Selenium	0.0049	0.0050	98		70 - 130	M	5/5/2015	03:21	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	03:21	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	03:21	B050415C 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	5/5/2015	03:21	B050415C 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	00:02	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	00:02	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	00:02	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Molybdenum	0.0012	J	0.00070	0.0007	0.0050	M	5/5/2015	00:02	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	00:02	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:03	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:03	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:03	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Molybdenum	0.0009	J	0.00070	0.0007	0.0050	M	5/5/2015	01:03	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:03	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:50	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:50	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:50	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	01:50	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:50	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	02:37	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	02:37	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	02:37	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	02:37	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	02:37	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	03:17	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	03:17	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	03:17	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	03:17	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	03:17	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	03:17	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	03:17	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2172597			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	5/5/2015	01:11	B050415C 2333
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	5/5/2015	01:11	B050415C 2333
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	5/5/2015	01:11	B050415C 2333
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	5/5/2015	01:11	B050415C 2333
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	5/5/2015	01:11	B050415C 2333
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Arsenic	0.0002				-0.00300 - -0.00300	5/5/2015	00:09	B050415C 233
	Barium	0.0003				-0.01000 - -0.01000	5/5/2015	00:09	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Cadmium	0.0008				-0.00100 - -0.00100	5/5/2015	00:09	B050415C 233
	Chromium	0.0006				-0.00400 - -0.00400	5/5/2015	00:09	B050415C 233
	Cobalt	0.0006				-0.00600 - -0.00600	5/5/2015	00:09	B050415C 233
	Copper	0.0010				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Lead	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Manganese	0.0013				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Molybdenum	1.8980	2.00000	95		80 - 120%	5/5/2015	00:09	B050415C 233
	Nickel	0.0006				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Selenium	0.0001				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Silver	0.0004				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Vanadium	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Arsenic	0.0195	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Barium	0.0004				-0.00500 - -0.00500	5/5/2015	00:13	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Cadmium	0.0095	0.01000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Chromium	0.0196	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Cobalt	0.0364	0.04000	91		80 - 120%	5/5/2015	00:13	B050415C 233
	Copper	0.0190	0.02000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Lead	0.0002				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Manganese	0.0204	0.02000	102		80 - 120%	5/5/2015	00:13	B050415C 233
	Molybdenum	1.9141	2.00000	96		80 - 120%	5/5/2015	00:13	B050415C 233
	Nickel	0.0350	0.04000	88		80 - 120%	5/5/2015	00:13	B050415C 233
	Selenium	0.0183	0.02000	92		80 - 120%	5/5/2015	00:13	B050415C 233
	Silver	0.0188	0.02000	94		80 - 120%	5/5/2015	00:13	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Vanadium	0.0406	0.04000	102		80 - 120%	5/5/2015	00:13	B050415C 233

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2172598									
	Antimony	mg/L	0.2220	0.2265		102		80 - 120	M
	Arsenic	mg/L	0.2220	0.2137		96		80 - 120	M
	Barium	mg/L	2.2220	2.1426		96		80 - 120	M
	Beryllium	mg/L	0.2220	0.2109		95		80 - 120	M
	Cadmium	mg/L	0.2220	0.2126		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2194		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2177		98		80 - 120	M
	Copper	mg/L	0.2220	0.2166		98		80 - 120	M
	Lead	mg/L	0.2220	0.2240		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2239		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2297		103		80 - 120	M
	Nickel	mg/L	0.2220	0.2126		96		80 - 120	M
	Selenium	mg/L	0.2220	0.2035		92		80 - 120	M
	Silver	mg/L	0.1110	0.1182		106		80 - 120	M
	Thallium	mg/L	0.2220	0.2170		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2198		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2333												
BLK	BLK	2337	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2340	100		112		100		100		101		101	
STANDARD 2	STANDARD 2	2344	100		98		100		100		100		100	
STANDARD 3	STANDARD 3	2348	102		103		102		102		102		102	
STANDARD 4	STANDARD 4	2351	99		98		100		101		99		101	
STANDARD 5	STANDARD 5	2355	103		111		104		105		103		103	
ICV	ICV	2358	101		97		101		101		100		100	
ICB1	ICB	0002	101		111		101		102		101		102	
LLICV	LLICV	0006	100		98		100		101		100		100	
ICS-A1	ICSA	0009	92		111		95		102		101		104	
ICS-AB1	ICSAB	0013	96		100		97		101		100		103	
CHECK	ZZZZZZ	0017												
CHECK	ZZZZZZ	0020												
2171997	ZZZZZZ	0024												
2171998	ZZZZZZ	0028												
2068070004	ZZZZZZ	0031												
2068070005	ZZZZZZ	0035												
2068070006	ZZZZZZ	0039												
2068297001	ZZZZZZ	0042												
2068298001	ZZZZZZ	0046												
2171999	ZZZZZZ	0049												
2172000	ZZZZZZ	0053												
2068298001P	ZZZZZZ	0056												
CCV1	CCV	0100	107		103		106		106		101		101	
CCB1	CCB	0103	104		101		102		101		98		101	
LLCCV	LLCCV	0107	107		111		106		106		102		103	
2172597	MB for HBN 70825	0111	103		151	*	103		103		100		102	
2172598	LCS for HBN 7082	0114	103		153	*	101		103		98		100	
2068120002	ZZZZZZ	0118												
2068120002L	ZZZZZZ	0121												
2068120002P	ZZZZZZ	0125												
2068120003	ZZZZZZ	0129												
2068120004	ZZZZZZ	0132												
2068120005	ZZZZZZ	0136												
2068120006	ZZZZZZ	0139												
2068120007	ZZZZZZ	0143												
CCV2	CCV	0147	107		106		104		104		97		98	
CCB2	CCB	0150	105		105		102		102		96		97	
LLCCV	LLCCV	0154	105		99		103		102		96		95	
2068120008	ZZZZZZ	0158												
2068120009	ZZZZZZ	0201												
2068120010	ZZZZZZ	0205												
2068120011	ZZZZZZ	0208												

*Ge was not used as an IS for this analytical run.

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068120005	ZZZZZZ	0212												
2068120007	ZZZZZZ	0216												
2068120009	ZZZZZZ	0219												
2068168005	ZZZZZZ	0223												
2068377002	MRC-MW-61A-05011	0227	89		186	*	97		106		108		109	
2068377004	MRC-MW-46A-05011	0230	106		148	*	108		113		107		109	
CCV3	CCV	0234	114		111		113		112		107		109	
CCB3	CCB	0237	112		109		110		109		103		104	
LLCCV	LLCCV	0241	111		107		108		107		103		102	
2067773001	ZZZZZZ	0245												
2067773001S	ZZZZZZ	0248												
2067773001S	ZZZZZZ	0252												
2068256001	ZZZZZZ	0256												
2068256002	ZZZZZZ	0259												
2068256003	ZZZZZZ	0303												
2068377002	MRC-MW-61A-05011	0307	109		117		110		114		110		117	
CHECK	ZZZZZZ	0310												
CCV4	CCV	0314	119		115		115		111		108		117	
CCB4	CCB	0317	118		108		112		110		105		112	
LLCCV	LLCCV	0321	115		107		110		107		106		113	
2067944001	ZZZZZZ	0325												
2172300	ZZZZZZ	0328												
2067905001	ZZZZZZ	0332												
2067924001	ZZZZZZ	0336												
2067924002	ZZZZZZ	0339												
2067924003	ZZZZZZ	0343												
2172303	ZZZZZZ	0347												
2172304	ZZZZZZ	0351												
2067924004	ZZZZZZ	0354												
2067924005	ZZZZZZ	0358												
CCV5	ZZZZZZ	0402												
CCB5	ZZZZZZ	0405												
2068062001	ZZZZZZ	0409												
2068094001	ZZZZZZ	0412												
2068152001	ZZZZZZ	0416												
2068183001	ZZZZZZ	0420												
2068185001	ZZZZZZ	0424												
2068235001	ZZZZZZ	0427												
2068390001	ZZZZZZ	0431												
2068390002	ZZZZZZ	0435												
2068390002	ZZZZZZ	0439												
2172427	ZZZZZZ	0443												
CCV6	ZZZZZZ	0447												
CCB6	ZZZZZZ	0450												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2333												
BLK	2337	100											
STANDARD 1	2340	100											
STANDARD 2	2344	99											
STANDARD 3	2348	102											
STANDARD 4	2351	99											
STANDARD 5	2355	103											
ICV	2358	100											
ICB	0002	101											
LLICV	0006	99											
ICSA	0009	99											
ICSAB	0013	100											
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0028												
ZZZZZZ	0031												
ZZZZZZ	0035												
ZZZZZZ	0039												
ZZZZZZ	0042												
ZZZZZZ	0046												
ZZZZZZ	0049												
ZZZZZZ	0053												
ZZZZZZ	0056												
CCV	0100	108											
CCB	0103	102											
LLCCV	0107	105											
MB for HBN 70825	0111	105											
LCS for HBN 7082	0114	104											
ZZZZZZ	0118												
ZZZZZZ	0121												
ZZZZZZ	0125												
ZZZZZZ	0129												
ZZZZZZ	0132												
ZZZZZZ	0136												
ZZZZZZ	0139												
ZZZZZZ	0143												
CCV	0147	106											
CCB	0150	104											
LLCCV	0154	104											
ZZZZZZ	0158												
ZZZZZZ	0201												
ZZZZZZ	0205												
ZZZZZZ	0208												
ZZZZZZ	0212												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-028

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0216												
ZZZZZZ	0219												
ZZZZZZ	0223												
MRC-MW-61A-05011	0227	103											
MRC-MW-46A-05011	0230	110											
CCV	0234	114											
CCB	0237	111											
LLCCV	0241	111											
ZZZZZZ	0245												
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
MRC-MW-61A-05011	0307	116											
ZZZZZZ	0310												
CCV	0314	118											
CCB	0317	116											
LLCCV	0321	112											
ZZZZZZ	0325												
ZZZZZZ	0328												
ZZZZZZ	0332												
ZZZZZZ	0336												
ZZZZZZ	0339												
ZZZZZZ	0343												
ZZZZZZ	0347												
ZZZZZZ	0351												
ZZZZZZ	0354												
ZZZZZZ	0358												
ZZZZZZ	0402												
ZZZZZZ	0405												
ZZZZZZ	0409												
ZZZZZZ	0412												
ZZZZZZ	0416												
ZZZZZZ	0420												
ZZZZZZ	0424												
ZZZZZZ	0427												
ZZZZZZ	0431												
ZZZZZZ	0435												
ZZZZZZ	0439												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0450												

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71519						
2068377002	MRC-MW-61A-050115	SAM	WATER	5/7/15	45.0	50.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/7/15	45.0	50.0	
2174195	MB for HBN 71519 [MDIG/50713	MB	QC-WAT	5/7/15	45.0	50.0	
2174196	LCS for HBN 71519 [MDIG/50713	LCS	QC-WAT	5/7/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0937												X													
ICAL2	1.00	0941												X													
ICAL3	1.00	0945												X													
ICAL4	1.00	0949												X													
ICAL5	1.00	0952												X													
ICV1	1.00	0958												X													
ICB1	1.00	1002												X													
ZZZZZZ	1.00	1009																									
CRDL2	1.00	1013												X													
CCV1	1.00	1016												X													
HIGH	1.00	1020												X													
ICS-A1	1.00	1023												X													
ICS-AB1	1.00	1027												X													
ZZZZZZ	1.00	1033																									
ZZZZZZ	1.00	1036																									
ZZZZZZ	200.00	1040																									
ZZZZZZ	10.00	1043																									
ZZZZZZ	50.00	1047																									
ZZZZZZ	10.00	1051																									
ZZZZZZ	5.00	1055																									
ZZZZZZ	5.00	1059																									
ZZZZZZ	5.00	1102																									
ZZZZZZ	1.00	1106																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1204																									
ZZZZZZ	5.00	1208																									
ZZZZZZ	5.00	1211																									
ZZZZZZ	5.00	1215																									
ZZZZZZ	5.00	1219																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1455																									
CCV6	1.00	1459												X													
CCB6	1.00	1502												X													
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1545																									
ZZZZZZ	1.00	1548																									
ZZZZZZ	2.00	1552																									
ZZZZZZ	1.00	1556																									
ZZZZZZ	1.00	1600																									
ZZZZZZ	1.00	1604																									
ZZZZZZ	1.00	1607																									
ZZZZZZ	1.00	1611																									
CCV8	1.00	1615												X													
CCB8	1.00	1618												X													
LLCCV	1.00	1744												X													
ZZZZZZ	1.00	1747																									
ICS-A3	1.00	1753												X													
ICS-AB3	1.00	1757												X													
ZZZZZZ	1.00	1801																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1223																									
ZZZZZZ	5.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	5.00	1238																									
ZZZZZZ	5.00	1241																									
ZZZZZZ	5.00	1245																									
ZZZZZZ	5.00	1249																									
ZZZZZZ	10.00	1253																									
ZZZZZZ	5.00	1257																									
ZZZZZZ	5.00	1301																									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1312																									
CCV4	1.00	1316											X														
ZZZZZZ	1.00	1319																									
CCB4	1.00	1326											X														
ZZZZZZ	5.00	1329																									
2068377002	1.00	1333											X														
2068377004	1.00	1345											X														
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1411																									
CCV5	1.00	1415											X														
CCB5	1.00	1418											X														
2174195	1.00	1422											X														
2174196	1.00	1426											X														
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1444																									

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- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.942	1.000	94		90 - 110	P	5/8/2015	09:58	050815 3015
CCV	Iron	2.505	2.500	100		90 - 110	P	5/8/2015	10:16	050815 3015
CCV	Iron	2.468	2.500	99		90 - 110	P	5/8/2015	13:16	050815 3015
CCV	Iron	2.489	2.500	100		90 - 110	P	5/8/2015	14:15	050815 3015
CCV	Iron	2.501	2.500	100		90 - 110	P	5/8/2015	14:59	050815 3015
CCV	Iron	2.439	2.500	98		90 - 110	P	5/8/2015	16:15	050815 3015
LLCCV	Iron	0.061	0.060	102		70 - 130	P	5/8/2015	17:44	050815 3015

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- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.067	0.060	112		70 - 130	P	5/8/2015	10:13	050815 301

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	10:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	13:26	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	14:18	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	15:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	16:18	050815 3015

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2174195			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/8/2015	14:22	050815 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	10:23	050815 3015
ICSAB									
	Iron	119.3	125.0	95		80 - 120%	5/8/2015	10:27	050815 3015
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	17:53	050815 3015
ICSAB									
	Iron	115.5	125.0	92		80 - 120%	5/8/2015	17:57	050815 3015

6010C 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2174196									
	Iron	mg/L	1.11	1.096		99		80 - 120	P

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1229																X								
Standard #1 (0.2ppb	1.00	1230																X								
	1.00	1231																X								
	1.00	1232																X								
	1.00	1233																X								
	1.00	1234																X								
ICV1	1.00	1236																X								
ICB1	1.00	1237																X								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1239																								
ZZZZZZ	1.00	1240																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
CCV2	1.00	1301																X								
CCB2	1.00	1302																X								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1306																								
ZZZZZZ	1.00	1307																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1310																									
2173295	1.00	1311																X									
2173296	1.00	1312																X									
ZZZZZZ	1.00	1313																									
CCV3	1.00	1314																X									
CCB3	1.00	1315																X									
ZZZZZZ	1.00	1316																									
ZZZZZZ	1.00	1318																									
ZZZZZZ	1.00	1319																									
ZZZZZZ	1.00	1320																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1323																									
2068377002	1.00	1324																X									
2068377004	1.00	1325																X									
ZZZZZZ	1.00	1326																									
CCV4	1.00	1327																X									
CCB4	1.00	1328																X									
ZZZZZZ	1.00	1330																									
ZZZZZZ	1.00	1331																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1430																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1434																									
ZZZZZZ	1.00	1435																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1438																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1441																									
ZZZZZZ	1.00	1444																									
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1453																									
ZZZZZZ	1.00	1455																									
ZZZZZZ	1.00	1456																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1459																									
ZZZZZZ	50.00	1500																									
ZZZZZZ	50.00	1501																									
ZZZZZZ	50.00	1502																									
ZZZZZZ	50.00	1503																									
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1515																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1518																									
ZZZZZZ	1.00	1519																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM028|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-028

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1520																										
ZZZZZZ	50.00	1521																										
ZZZZZZ	50.00	1522																										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-028 Method Type: 7470A SOW No.:

Contract: TMM028|112IC06247 Lab Code: CAS Case No.: Lockhee SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2068377002	MRC-MW-61A-050115	
2068377004	MRC-MW-46A-050115	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/7/2015	12:36	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:01	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:14	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:27	050715W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	12:37	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:02	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:15	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:28	050715W

7470A
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173295			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/7/2015	13:11	050715W

7470A
- 7 -
LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173296									
	Mercury	mg/L	0.0020	0.0018		90		85 - 115	CV

7470A
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-028

Contract: TMM028|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71111						
2173295	MB for HBN 71111 [MDIG/50685	MB	QC-WAT	5/7/15	25.0	25.0	
2173296	LCS for HBN 71111 [MDIG/50685	LCS	QC-WAT	5/7/15	25.0	25.0	
2068377002	MRC-MW-61A-050115	SAM	WATER	5/7/15	25.0	25.0	
2068377004	MRC-MW-46A-050115	SAM	WATER	5/7/15	25.0	25.0	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JULY 21, 2015**

FROM: **MICHELLE L. ALLEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC & INORGANIC DATA VALIDATION – VOC/OVG/1,4-DIOXANE/PCB/METALS/ PERCHLORATE/MISCELLANEOUS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) GROUNDWATER SAMPLING
SDG 2065603R

SAMPLES: 6/Aqueous/VOC

MRC-MW-114A-041415	MRC-MW-16A-041515	MRC-MW-33A-041515
MRC-MW-72B-041515	MRC-MW-73B-041515	Trip Blank

4/Aqueous/1,4-Dioxane

MRC-MW-114A-041415	MRC-MW-15A-041515	MRC-MW-16A-041515
MRC-MW-44A-041415		

1/Aqueous/OVG/Perchlorate/Miscellaneous

MRC-MW-72B-041515

5/Aqueous/PCB

MRC-MW-103A-041415	MRC-MW-103B-041415	MRC-MW-114A-041415
MRC-MW-43A-041415	MRC-MW-44A-041415	

5/Aqueous/Metals

MRC-MW-15A-041515	MRC-MW-16A-041515	MRC-MW-30A-041515
MRC-MW-31A-041515	MRC-MW-33A-041515	

Overview

The sample set for LMC-MSA, SDG 2065603R consisted of twelve (12) aqueous environmental samples and one (1) trip blank. Four (4) aqueous environmental samples and the one (1) trip blank were analyzed for Volatile Organic Compounds (VOC). Four (4) aqueous environmental samples were analyzed for 1,4-dioxane. One (1) aqueous environmental sample were analyzed for Volatile Organic Gases (OVG), perchlorate, and miscellaneous parameters (ammonia as N, carbonate alkalinity, chloride, nitrate, nitrite, sulfate, and Total Organic Carbon (TOC)). Five (5) aqueous environmental samples were analyzed for Polychlorinated Biphenyl Compounds (PCB). Five (5) aqueous environmental samples were analyzed for metals. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 14-15, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 8082A, 6850, 6010C, 6020A, 7470A, and 9060A, RSK-175, EPA Methods 300.0, 522, and 680, and Standard Methods 4500NH3 and 2320B analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, Interference Check Sample (ICS) results, laboratory method/preparation and trip blank results, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, internal standard areas, serial dilution

results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- The VOC initial and continuing calibrations performed on instrument ms15.i had Relative Response Factors (RRFs) for 1,4-dioxane below the 0.005 minimum response criterion. All VOC samples were affected. The detected and non-detected results reported for this compound in the affected samples were qualified as estimated, (J) and rejected, (UR), respectively.

Minor

- The continuing calibration performed on 04/23/15 @ 11:17 had Percent Differences (%Ds) for carbon disulfide, dichlorodifluoromethane, and methyl cyclohexane and a Percent Drift (%Drift) for bromomethane which exceeded the 20% quality control limit. Samples MRC-MW-16A-041515, MRC-MW-33A-041515, and MRC-MW-73B-041515 were affected. No action was taken for bromomethane because the affected results were qualified for blank contamination. The detected and non-detected results reported for the remaining compounds in the affected samples were qualified as estimated, (UJ).

- The PCB opening Continuing Calibration Verification (CCV) on both GC columns had an average %D for Aroclor 1260 greater than the 20% quality control limit. In addition, the average %Ds for Aroclor 1016 and Aroclor 1260 on GC column 1 exceeded 20% in the closing CCV. All samples were affected. The non-detected results reported for these PCBs in the affected samples were qualified as estimated, (UJ).

- The closing Limit of Detection Verification (LODV) for perchlorate exceeded the ± 50% quality control criteria. The detected results reported for perchlorate in the affected sample, MRC-MW-72B-041515, were qualified as estimated, (J).

- The following compounds/analytes below were detected in the laboratory method and preparation blanks at the following maximum concentrations:

Compound/Analyte	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane (1)	0.67	3.35
Bromomethane (2)	0.62	3.1
Tetrachloroethene (3)	0.64	3.2
Molybdenum (4)	0.00142 mg/L	0.0071 mg/L
Total Alkalinity (5)	2.88 mg/L	14.4 mg/L
Chloride (6)	0.22 mg/L	1.1 mg/L
DOC (7)	0.295 mg/L	1.475 mg/L

(1) - Maximum concentration detected in the laboratory method blank 2167095 (MB), from preparation batch #68557 affecting sample MRC-MW-114A-041415, MRC-MW-72B-041515, and Trip Blank.

(2) - Maximum concentration detected in the laboratory method blank, 216253 (MB), from preparation batch #68943 affecting samples MRC-MW-16A-041515, MRC-MW-33A-041515, and MRC-MW-73B-041515.
(3) - Maximum concentration detected in the Trip Blank affecting all VOC samples.
(4) - Maximum concentration detected in the 6020A laboratory method blank affecting all metals samples.
(5) - Maximum concentration detected in the continuing calibration blank affecting sample MRC-MW-72B-041515.
(6) - Maximum concentration detected in the continuing calibration blank affecting sample MRC-MW-72B-041515.
(7) - Maximum concentration detected in the continuing calibration blank affecting sample MRC-MW-72B-041515.

Action levels of 5X the maximum concentration were established to evaluate for laboratory blank contamination. Dilution factor, if necessary, was taken into consideration during the application of the action level. The detected results reported for these compounds in the affected samples below the established action level were qualified as non-detected, (U).

- The VOC Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses performed on sample MRC-MW-72B-041515 had Percent Recoveries (%Rs) for cis-1,3-dichloropropene below the lower quality control limit. In addition, the MS %R for trans-1,2-dichloroethene and the MS/MSD %Rs for methylcyclohexane were above the upper quality control limits. No action was taken for trans-1,2-dichloroethene and methylcyclohexane because these compounds were not detected in the parent sample. The non-detected result reported for cis-1,3-dichloropropene in the parent sample was qualified as estimated, (UJ).

- Detected results reported below the RL but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

The trip blank was not included on the Chain of Custody (COC) form.

The VOC Laboratory Control Sample (LCS) analysis had %Rs for trans-1,2-dichloroethene and methylene chloride above the upper quality control limits. No action was taken because these compounds were not detected in the associated samples.

The perchlorate MS/MSD analyses %Rs for below the lower quality control limit. No action was taken in the associated sample because the unspiked sample was not in this SDG.

The following samples were diluted due to concentrations of VOC compounds:

Sample	Compound	Dilution
MRC-MW-114A-041415	1,2,4-Trichlorobenzene	10X
	1,2-Dichloroethane	10X
	Chlorobenzene	10X
MRC-MW-72B-041515	Trichloroethene	100X

The diluted results were used in the data validation.

Sample MRC-MW-72B-041515 was diluted 2X in the chloride and nitrite analyses, and 5X in the nitrate and

sulfate analyses.

1,4-Dioxane was reported in both the VOC fraction and the EPA Method 522 analysis for sample MRC-MW-72B-041515.

Non-detected results were reported to the MDL.

Executive Summary

Laboratory Performance: 1,4-Dioxane was rejected in the VOC analyses due to low RRFs. VOC continuing calibration %Ds exceeded 20%. Average PCB CCVs exceeded 20%. Contaminants were detected in the laboratory preparation and method blanks. The VOC LCS had high %Rs for two compounds.

Other Factors Affecting Data Quality: Some samples were diluted. The VOC and perchlorate MS/MSD analyses had noncompliant %Rs. Results below the RL were estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Michelle L. Allen
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-15A-041515			MRC-MW-16A-041515			MRC-MW-30A-041515			MRC-MW-31A-041515		
SDG: 2065603R	LAB_ID	2065603007			2065603006			2065603010			2065603009		
FRACTION: M	SAMP_DATE	4/15/2015			4/15/2015			4/15/2015			4/15/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U		0.0008	J	P	0.0022	U	
ARSENIC		0.0014	J	P	0.003	U		0.003	U		0.003	U	
BARIUM		0.12			0.27			0.059			0.095		
BERYLLIUM		0.001	U		0.0086			0.001	U		0.0054		
CADMIUM		0.0011	U		0.0016			0.0011	U		0.0011	U	
CHROMIUM		0.00097	J	P	0.0011	J	P	0.002	J	P	0.00087	J	P
COBALT		0.027			0.37			0.0066			0.049		
COPPER		0.0022	J	P	0.0076			0.0026	J	P	0.023		
IRON		23.3			10.7			0.09			0.067	U	
LEAD		0.0022	U		0.00083	J	P	0.0022	U		0.0022	U	
MANGANESE		4.3			5.9			0.046			0.02		
MERCURY		0.0005	U		0.0005	U		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	U		0.0022	U		0.00094	U	A	0.0022	U	
NICKEL		0.0069			0.36			0.0062			0.088		
SELENIUM		0.0056	U		0.0056	U		0.0056	U		0.0056	U	
SILVER		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
THALLIUM		0.001	U		0.001	U		0.001	U		0.001	U	
VANADIUM		0.0022	U		0.0012	J	P	0.0067			0.0022	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-33A-041515		
SDG: 2065603R	LAB_ID	2065603008		
FRACTION: M	SAMP_DATE	4/15/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.0022	U	
ARSENIC		0.003	U	
BARIUM		0.043		
BERYLLIUM		0.0043		
CADMIUM		0.0011	U	
CHROMIUM		0.00081	J	P
COBALT		0.047		
COPPER		0.0051	J	P
IRON		0.052	J	P
LEAD		0.0022	U	
MANGANESE		0.25		
MERCURY		0.0005	U	
MOLYBDENUM		0.0022	U	
NICKEL		0.035		
SELENIUM		0.0056	U	
SILVER		0.0022	U	
THALLIUM		0.001	U	
VANADIUM		0.0022	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-72B-041515					
SDG: 2065603R	LAB_ID	2065603011					
FRACTION: MISC	SAMP_DATE	4/15/2015					
MEDIA: WATER	QC_TYPE	NM					
	UNITS	MG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		36					
AMMONIA		0.15	J	P			
CHLORIDE		11.1					
DISSOLVED ORGANIC CARBON		1.5					
NITRATE-N		0.55					
NITRITE-N		0.2	U				
PERCHLORATE					0.15	J	P
SULFATE		3.9					

PROJ_NO: 06247	NSAMPLE	MRC-MW-114A-041415			MRC-MW-15A-041515			MRC-MW-16A-041515			MRC-MW-44A-041415		
SDG: 2065603R	LAB_ID	2065603005			2065603007			2065603006			2065603002		
FRACTION: OS	SAMP_DATE	4/14/2015			4/15/2015			4/15/2015			4/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.85			16.4			68.6			0.18		

PROJ_NO: 06247	NSAMPLE	MRC-MW-114A-041415			MRC-MW-114A-041415-DL			MRC-MW-16A-041515			MRC-MW-33A-041515		
SDG: 2065603R	LAB_ID	2065603005			2065603005			2065603006			2065603008		
FRACTION: OV	SAMP_DATE	4/14/2015			4/14/2015			4/15/2015			4/15/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U					1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U					1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U					1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U					1	U		1	U	
1,1-DICHLOROETHANE		1	U					41.6			1	U	
1,1-DICHLOROETHENE		1	U					122			0.3	J	P
1,2,3-TRICHLOROBENZENE		97						2	U		2	U	
1,2,4-TRICHLOROBENZENE					260			2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U					7	U		7	U	
1,2-DIBROMOETHANE		1	U					1	U		1	U	
1,2-DICHLOROBENZENE		17.4						1	U		1	U	
1,2-DICHLOROETHANE					903			0.36	J	P	1	U	
1,2-DICHLOROPROPANE		6.4						1	U		1	U	
1,3-DICHLOROBENZENE		4.9						1	U		1	U	
1,4-DICHLOROBENZENE		49.2						1	U		1	U	
1,4-DIOXANE		320	UR	C				63.1	J	CP	320	UR	C
2-BUTANONE		10	U					10	U		10	U	
2-HEXANONE		5	U					5	U		5	U	
4-METHYL-2-PENTANONE		5	U					5	U		5	U	
ACETONE		10	U					10	U		10	U	
BENZENE		6						0.99	J	P	1	U	
BROMOCHLOROMETHANE		1	U					1	U		1	U	
BROMODICHLOROMETHANE		1	U					1	U		1	U	
BROMOFORM		1	U					1	U		1	U	
BROMOMETHANE		0.43	U	A				1	U		0.64	U	A
CARBON DISULFIDE		0.82	J	P				1	UJ	C	1	UJ	C
CARBON TETRACHLORIDE		1	U					1	U		1	U	
CHLOROBENZENE					366			1	U		1	U	
CHLORODIBROMOMETHANE		1	U					1	U		1	U	
CHLOROETHANE		1	U					1	U		1	U	
CHLOROFORM		1	U					1	U		1	U	
CHLOROMETHANE		1	U					1	U		1	U	
CIS-1,2-DICHLOROETHENE		0.7	J	P				16.7			1.1		
CIS-1,3-DICHLOROPROPENE		1	U					1	U		1	U	
CYCLOHEXANE		1	U					0.51	J	P	1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-72B-041515			MRC-MW-72B-041515-DL			MRC-MW-73B-041515			Trip Blank_20150415		
SDG: 2065603R	LAB_ID	2065603011			2065603011			2065603012			2065603013		
FRACTION: OV	SAMP_DATE	4/15/2015			4/15/2015			4/15/2015			4/15/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U					1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U					1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U					1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1.3						1	U		1	U	
1,1-DICHLOROETHANE		1	U					1	U		1	U	
1,1-DICHLOROETHENE		1	U					1	U		1	U	
1,2,3-TRICHLOROBENZENE		2	U					2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U					2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U					7	U		7	U	
1,2-DIBROMOETHANE		1	U					1	U		1	U	
1,2-DICHLOROBENZENE		1	U					1	U		1	U	
1,2-DICHLOROETHANE		1	U					1	U		1	U	
1,2-DICHLOROPROPANE		1	U					1	U		1	U	
1,3-DICHLOROBENZENE		1	U					1	U		1	U	
1,4-DICHLOROBENZENE		1	U					1	U		1	U	
1,4-DIOXANE		320	UR	C				320	UR	C	320	UR	C
2-BUTANONE		10	U					10	U		10	U	
2-HEXANONE		5	U					5	U		5	U	
4-METHYL-2-PENTANONE		5	U					5	U		5	U	
ACETONE		10	U					10	U		10	U	
BENZENE		1	U					1	U		1	U	
BROMOCHLOROMETHANE		1	U					1	U		1	U	
BROMODICHLOROMETHANE		1	U					1	U		1	U	
BROMOFORM		1	U					1	U		1	U	
BROMOMETHANE		0.47	U	A				0.57	U	A	0.48	J	P
CARBON DISULFIDE		1	U					1	UJ	C	1	U	
CARBON TETRACHLORIDE		1	U					1	U		1	U	
CHLOROBENZENE		0.26	J	P				0.27	J	P	1	U	
CHLORODIBROMOMETHANE		1	U					1	U		1	U	
CHLOROETHANE		1	U					1	U		1	U	
CHLOROFORM		1	U					1	U		1	U	
CHLOROMETHANE		1	U					1	U		1	U	
CIS-1,2-DICHLOROETHENE		2.4						3.5			1	U	
CIS-1,3-DICHLOROPROPENE		1	UJ	D				1	U		1	U	
CYCLOHEXANE		1	U					1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-114A-041415			MRC-MW-114A-041415-DL			MRC-MW-16A-041515			MRC-MW-33A-041515		
SDG: 2065603R	LAB_ID	2065603005			2065603005			2065603006			2065603008		
FRACTION: OV	SAMP_DATE	4/14/2015			4/14/2015			4/15/2015			4/15/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U					1	UJ	C	1	UJ	C
ETHYLBENZENE		1	U					1	U		1	U	
ISOPROPYLBENZENE		1	U					1	U		1	U	
M+P-XYLENES		2	U					2	U		2	U	
METHYL ACETATE		2	U					2	U		2	U	
METHYL CYCLOHEXANE		1	U					0.49	J	CP	1	UJ	C
METHYL TERT-BUTYL ETHER		1	U					1	U		1.9		
METHYLENE CHLORIDE		1	U					1	U		1	U	
O-XYLENE		1	U					1	U		1	U	
STYRENE		1	U					1	U		1	U	
TETRACHLOROETHENE		3.3						9.9			1	U	
TOLUENE		1	U					1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U					1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U					1	U		1	U	
TRICHLOROETHENE		4.7						28.5			1.1		
TRICHLOROFLUOROMETHANE		187						1	U		1	U	
VINYL CHLORIDE		3.5						17.3			1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-72B-041515			MRC-MW-72B-041515-DL			MRC-MW-73B-041515			Trip Blank_20150415		
SDG: 2065603R	LAB_ID	2065603011			2065603011			2065603012			2065603013		
FRACTION: OV	SAMP_DATE	4/15/2015			4/15/2015			4/15/2015			4/15/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U					1	UJ	C	1	U	
ETHYLBENZENE		1	U					1	U		1	U	
ISOPROPYLBENZENE		1	U					1	U		1	U	
M+P-XYLENES		2	U					2	U		2	U	
METHYL ACETATE		2	U					2	U		2	U	
METHYL CYCLOHEXANE		1	U					1	UJ	C	1	U	
METHYL TERT-BUTYL ETHER		1	U					1	U		1	U	
METHYLENE CHLORIDE		1	U					1	U		1	U	
O-XYLENE		1	U					1	U		1	U	
STYRENE		1	U					1	U		1	U	
TETRACHLOROETHENE		0.66	U	B				1	U		0.64	J	P
TOLUENE		1	U					1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U					1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U					1	U		1	U	
TRICHLOROETHENE					1790			68.8			1	U	
TRICHLOROFLUOROMETHANE		1	U					1	U		1	U	
VINYL CHLORIDE		1	U					1			1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-72B-041515		
SDG: 2065603R	LAB_ID	2065603011		
FRACTION: OVG	SAMP_DATE	4/15/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ETHANE		3.3	U	
ETHENE		2.4	U	
METHANE		1.5	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-103A-041415			MRC-MW-103B-041415			MRC-MW-114A-041415			MRC-MW-43A-041415		
SDG: 2065603R	LAB_ID	2065603003			2065603004			2065603005			2065603001		
FRACTION: PCB	SAMP_DATE	4/14/2015			4/14/2015			4/14/2015			4/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
AROCLOR-1016		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1221		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1232		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1242		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1248		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1254		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1260		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1262		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
AROCLOR-1268		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TOTAL AROCLOR		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C

PROJ_NO: 06247	NSAMPLE	MRC-MW-44A-041415		
SDG: 2065603R	LAB_ID	2065603002		
FRACTION: PCB	SAMP_DATE	4/14/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
AROCLOR-1016		0.48	UJ	C
AROCLOR-1221		0.48	UJ	C
AROCLOR-1232		0.48	UJ	C
AROCLOR-1242		0.48	UJ	C
AROCLOR-1248		0.48	UJ	C
AROCLOR-1254		0.48	UJ	C
AROCLOR-1260		0.48	UJ	C
AROCLOR-1262		0.48	UJ	C
AROCLOR-1268		0.48	UJ	C
TOTAL AROCLOR		0.48	UJ	C

Appendix B

Results as Reported by the Laboratory

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-114A-041415

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042120.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	6.0	
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.43	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.82	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	385	E
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	17.4	
541-73-1	1,3-Dichlorobenzene	4.9	
106-46-7	1,4-Dichlorobenzene	49.2	
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	889	E
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.70	J
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	6.4	
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-114A-041415

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042120.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	3.3	
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	97.0	
120-82-1	1,2,4-Trichlorobenzene	363	E
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	4.7	
75-69-4	Trichlorofluoromethane	187	
75-01-4	Vinyl Chloride	3.5	
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-114A-041415-DL10

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042313.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	100	U
71-43-2	Benzene	6.4	J
74-97-5	Bromochloromethane	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	5.3	J
78-93-3	2-Butanone	100	U
75-15-0	Carbon Disulfide	10	U
56-23-5	Carbon Tetrachloride	10	U
108-90-7	Chlorobenzene	366	
124-48-1	Chlorodibromomethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	70.0	U
106-93-4	1,2-Dibromoethane	10	U
95-50-1	1,2-Dichlorobenzene	16.2	
541-73-1	1,3-Dichlorobenzene	4.9	J
106-46-7	1,4-Dichlorobenzene	46.0	
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	903	
75-35-4	1,1-Dichloroethene	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
78-87-5	1,2-Dichloropropane	6.2	J
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
123-91-1	1,4-Dioxane	3200	U
100-41-4	Ethylbenzene	10	U
76-13-1	Freon 113	10	U
591-78-6	2-Hexanone	50.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-114A-041415-DL10

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042313.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	10	U
79-20-9	Methyl acetate	20.0	U
108-87-2	Methyl cyclohexane	10	U
1634-04-4	Methyl t-Butyl Ether	10	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	50.0	U
75-09-2	Methylene Chloride	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	3.8	J
108-88-3	Toluene	10	U
87-61-6	1,2,3-Trichlorobenzene	70.0	
120-82-1	1,2,4-Trichlorobenzene	260	
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	6.3	J
75-69-4	Trichlorofluoromethane	192	
75-01-4	Vinyl Chloride	3.7	J
95-47-6	o-Xylene	10	U
108383/106423	mp-Xylene	20.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-16A-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042308.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	0.99	J
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	0.51	J
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	41.6	
107-06-2	1,2-Dichloroethane	0.36	J
75-35-4	1,1-Dichloroethene	122	
156-59-2	cis-1,2-Dichloroethene	16.7	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	63.1	J
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-16A-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042308.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	0.49	J
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	9.9	
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	28.5	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	17.3	
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-33A-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603008

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042309.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.64	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	0.30	J
156-59-2	cis-1,2-Dichloroethene	1.1	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-33A-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603008

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042309.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.9	
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.1	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-72B-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603011

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042123.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.47	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.26	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	2.4	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.3	
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-72B-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603011

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042123.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	0.66	J
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	2020	E
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-72B-041515-DL100

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603011

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042315.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 100.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	1000	U
71-43-2	Benzene	100	U
74-97-5	Bromochloromethane	100	U
75-27-4	Bromodichloromethane	100	U
75-25-2	Bromoform	100	U
74-83-9	Bromomethane	45.7	J
78-93-3	2-Butanone	1000	U
75-15-0	Carbon Disulfide	100	U
56-23-5	Carbon Tetrachloride	100	U
108-90-7	Chlorobenzene	100	U
124-48-1	Chlorodibromomethane	100	U
75-00-3	Chloroethane	100	U
67-66-3	Chloroform	100	U
74-87-3	Chloromethane	100	U
110-82-7	Cyclohexane	100	U
96-12-8	1,2-Dibromo-3-Chloropropane	700	U
106-93-4	1,2-Dibromoethane	100	U
95-50-1	1,2-Dichlorobenzene	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
75-71-8	Dichlorodifluoromethane	100	U
75-34-3	1,1-Dichloroethane	100	U
107-06-2	1,2-Dichloroethane	100	U
75-35-4	1,1-Dichloroethene	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
123-91-1	1,4-Dioxane	32000	U
100-41-4	Ethylbenzene	100	U
76-13-1	Freon 113	100	U
591-78-6	2-Hexanone	500	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-72B-041515-DL100

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603011

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042315.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 100.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	100	U
79-20-9	Methyl acetate	200	U
108-87-2	Methyl cyclohexane	100	U
1634-04-4	Methyl t-Butyl Ether	100	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	500	U
75-09-2	Methylene Chloride	100	U
100-42-5	Styrene	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
127-18-4	Tetrachloroethene	100	U
108-88-3	Toluene	100	U
87-61-6	1,2,3-Trichlorobenzene	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
71-55-6	1,1,1-Trichloroethane	100	U
79-00-5	1,1,2-Trichloroethane	100	U
79-01-6	Trichloroethene	1790	
75-69-4	Trichlorofluoromethane	100	U
75-01-4	Vinyl Chloride	100	U
95-47-6	o-Xylene	100	U
108383/106423	mp-Xylene	200	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-73B-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603012

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042310.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.57	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.27	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	3.5	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-73B-041515

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603012

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042310.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	68.8	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Trip Blank

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603013

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042117.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.48	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Trip Blank

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2065603013

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042117.D

Level (low/med): Date Received: 4/15/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	0.64	J
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-4
4A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603002

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042306

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.18	_____

FORM I SV

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-11
4A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603005

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042307

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.85	_____

FORM I SV

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-1
6A-041515

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603006

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042328

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	68.6	_____

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-1
5A-041515

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603007

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042309

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	16.4	_____

FORM I SV

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-7
2B-041515

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603011

Sample wt/vol: _____ (g/mL) ML Lab File ID: MDLA007

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: not dec. _____ Date Analyzed: 04/21/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-4
3A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603001

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKA029

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-4
4A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603002

Sample wt/vol: 1035 (g/ml) ML Lab File ID: NDKA030

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.48	U
11104-28-2	Aroclor 1221	0.48	U
11141-16-5	Aroclor 1232	0.48	U
53469-21-9	Aroclor 1242	0.48	U
12672-29-6	Aroclor 1248	0.48	U
11097-69-1	Aroclor 1254	0.48	U
11096-82-5	Aroclor 1260	0.48	U
11100-14-4	Aroclor 1268	0.48	U
37324-23-5	Aroclor 1262	0.48	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-10
3A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603003

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKA031

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-10
3B-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603004

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKA032

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-11
4A-041415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2065603005

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKA033

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6020 3015

Sample ID: 2065603006 **Client ID:** MRC-MW-16A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68264 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:50:13
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	01:50:13
Barium	7440-39-3	0.27	mg/L			M	0.0056	1.00	4/21/2015	01:50:13
Beryllium	7440-41-7	0.0086	mg/L			M	0.0010	1.00	4/21/2015	01:50:13
Cadmium	7440-43-9	0.0016	mg/L			M	0.0011	1.00	4/21/2015	01:50:13
Chromium	7440-47-3	0.0011	mg/L	J		M	0.0022	1.00	4/21/2015	01:50:13
Cobalt	7440-48-4	0.37	mg/L			M	0.0056	1.00	4/21/2015	01:50:13
Copper	7440-50-8	0.0076	mg/L			M	0.0056	1.00	4/21/2015	01:50:13
Lead	7439-92-1	0.0008	mg/L	J		M	0.0022	1.00	4/21/2015	01:50:13
Manganese	7439-96-5	5.9	mg/L			M	0.0056	1.00	4/21/2015	01:50:13
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:50:13
Nickel	7440-02-0	0.36	mg/L			M	0.0056	1.00	4/21/2015	01:50:13
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:50:13
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:50:13
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	01:50:13
Vanadium	7440-62-2	0.0012	mg/L	J		M	0.0022	1.00	4/21/2015	01:50:13

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6010C 3015

Sample ID: 2065603006 **Client ID:** MRC-MW-16A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68231 **Prep Date:** 4/19/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	10.7	mg/L			P	0.067	1.00	4/20/2015	11:18:52

Comments:

7470A

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 7470A

Sample ID: 2065603006 **Client ID:** MRC-MW-16A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68323 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/20/2015	15:32:35

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6020 3015

Sample ID: 2065603007 **Client ID:** MRC-MW-15A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68264 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:53:54
Arsenic	7440-38-2	0.0014	mg/L	J		M	0.0030	1.00	4/21/2015	01:53:54
Barium	7440-39-3	0.12	mg/L			M	0.0056	1.00	4/21/2015	01:53:54
Beryllium	7440-41-7	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	01:53:54
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	01:53:54
Chromium	7440-47-3	0.0010	mg/L	J		M	0.0022	1.00	4/21/2015	01:53:54
Cobalt	7440-48-4	0.027	mg/L			M	0.0056	1.00	4/21/2015	01:53:54
Copper	7440-50-8	0.0022	mg/L	J		M	0.0056	1.00	4/21/2015	01:53:54
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:53:54
Manganese	7439-96-5	4.3	mg/L			M	0.0056	1.00	4/21/2015	01:53:54
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:53:54
Nickel	7440-02-0	0.0069	mg/L			M	0.0056	1.00	4/21/2015	01:53:54
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:53:54
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:53:54
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	01:53:54
Vanadium	7440-62-2	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:53:54

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6010C 3015

Sample ID: 2065603007 **Client ID:** MRC-MW-15A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68231 **Prep Date:** 4/19/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	23.3	mg/L			P	0.067	1.00	4/20/2015	11:21:56

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 7470A

Sample ID: 2065603007 **Client ID:** MRC-MW-15A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68323 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/20/2015	15:33:39

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6020 3015

Sample ID: 2065603008 **Client ID:** MRC-MW-33A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68264 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:57:36
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	01:57:36
Barium	7440-39-3	0.043	mg/L			M	0.0056	1.00	4/21/2015	01:57:36
Beryllium	7440-41-7	0.0043	mg/L			M	0.0010	1.00	4/21/2015	01:57:36
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	01:57:36
Chromium	7440-47-3	0.0008	mg/L	J		M	0.0022	1.00	4/21/2015	01:57:36
Cobalt	7440-48-4	0.047	mg/L			M	0.0056	1.00	4/21/2015	01:57:36
Copper	7440-50-8	0.0051	mg/L	J		M	0.0056	1.00	4/21/2015	01:57:36
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:57:36
Manganese	7439-96-5	0.25	mg/L			M	0.0056	1.00	4/21/2015	01:57:36
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:57:36
Nickel	7440-02-0	0.035	mg/L			M	0.0056	1.00	4/21/2015	01:57:36
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	01:57:36
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:57:36
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	01:57:36
Vanadium	7440-62-2	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	01:57:36

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6010C 3015

Sample ID: 2065603008 **Client ID:** MRC-MW-33A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68231 **Prep Date:** 4/19/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	0.052	mg/L	J		P	0.067	1.00	4/20/2015	11:25:09

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 7470A

Sample ID: 2065603008 **Client ID:** MRC-MW-33A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68398 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/21/2015	13:59:23

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6020 3015

Sample ID: 2065603009 **Client ID:** MRC-MW-31A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68264 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:01:14
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	02:01:14
Barium	7440-39-3	0.095	mg/L			M	0.0056	1.00	4/21/2015	02:01:14
Beryllium	7440-41-7	0.0054	mg/L			M	0.0010	1.00	4/21/2015	02:01:14
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	02:01:14
Chromium	7440-47-3	0.0009	mg/L	J		M	0.0022	1.00	4/21/2015	02:01:14
Cobalt	7440-48-4	0.049	mg/L			M	0.0056	1.00	4/21/2015	02:01:14
Copper	7440-50-8	0.023	mg/L			M	0.0056	1.00	4/21/2015	02:01:14
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:01:14
Manganese	7439-96-5	0.020	mg/L			M	0.0056	1.00	4/21/2015	02:01:14
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	02:01:14
Nickel	7440-02-0	0.088	mg/L			M	0.0056	1.00	4/21/2015	02:01:14
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	02:01:14
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:01:14
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	02:01:14
Vanadium	7440-62-2	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:01:14

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6010C 3015

Sample ID: 2065603009 **Client ID:** MRC-MW-31A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68231 **Prep Date:** 4/19/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	0.067	mg/L	U		P	0.067	1.00	4/20/2015	11:28:17

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 7470A

Sample ID: 2065603009 **Client ID:** MRC-MW-31A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68398 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/21/2015	14:00:27

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6020 3015

Sample ID: 2065603010 **Client ID:** MRC-MW-30A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68264 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.00080	mg/L	J		M	0.0022	1.00	4/21/2015	02:11:51
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	02:11:51
Barium	7440-39-3	0.059	mg/L			M	0.0056	1.00	4/21/2015	02:11:51
Beryllium	7440-41-7	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	02:11:51
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	02:11:51
Chromium	7440-47-3	0.0020	mg/L	J		M	0.0022	1.00	4/21/2015	02:11:51
Cobalt	7440-48-4	0.0066	mg/L			M	0.0056	1.00	4/21/2015	02:11:51
Copper	7440-50-8	0.0026	mg/L	J		M	0.0056	1.00	4/21/2015	02:11:51
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:11:51
Manganese	7439-96-5	0.046	mg/L			M	0.0056	1.00	4/21/2015	02:11:51
Molybdenum	7439-98-7	0.0009	mg/L	J		M	0.0056	1.00	4/21/2015	02:11:51
Nickel	7440-02-0	0.0062	mg/L			M	0.0056	1.00	4/21/2015	02:11:51
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	02:11:51
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	02:11:51
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	02:11:51
Vanadium	7440-62-2	0.0067	mg/L			M	0.0022	1.00	4/21/2015	02:11:51

Comments:

-

6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 6010C 3015

Sample ID: 2065603010 **Client ID:** MRC-MW-30A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68231 **Prep Date:** 4/19/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	0.090	mg/L			P	0.067	1.00	4/20/2015	11:31:26

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016 **Method Type:** 7470A

Sample ID: 2065603010 **Client ID:** MRC-MW-30A-041515

Matrix: GROUND WATER **Date Received:** 4/15/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68398 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/21/2015	14:01:31

Comments:

ANALYTICAL REPORT

Workorder: 34-1511257
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: 2065603 011	Sampling Site: NA	Collected: 04/15/2015
Lab ID: 1511257001	Media: 125 mL Nalgene	Received: 04/22/2015
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850

Preparation: Not Applicable	**Analysis:** EPA 6850, Water	**Instrument ID:** LCMS04
	Batch: ELMS/1562 (HBN: 147840)	**Percent Solid:** NA
	Analyzed: 04/28/2015 16:21	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	0.15	0.060	0.20	1	J

Comments

Quality Control: EPA 6850 - (HBN: 147840)

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 04/29/2015 11:04	/S/ Thomas T. McKay 04/29/2015 16:04

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2065603 TMM016|MRC-GW 2015 Sampling

Lab ID: **2065603011** Date Collected: 4/15/2015 12:45 Matrix: Ground Water

Sample ID: **MRC-MW-72B-041515** Date Received: 4/15/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 17:02	TMP	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/21/15 17:02	TMP	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/21/15 17:02	TMP	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 17:02	TMP	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/21/15 17:02	TMP	B
Tetrachloroethene	0.66J	J	ug/L	1.0	0.35	SW846 8260C			4/21/15 17:02	TMP	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/21/15 17:02	TMP	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/21/15 17:02	TMP	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/21/15 17:02	TMP	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/21/15 17:02	TMP	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 17:02	TMP	B
Trichloroethene	1790		ug/L	100	33.0	SW846 8260C			4/23/15 15:27	TMP	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 17:02	TMP	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/21/15 17:02	TMP	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 17:02	TMP	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/21/15 17:02	TMP	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133		SW846 8260C			4/23/15 15:27	TMP	B
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C			4/21/15 17:02	TMP	B
4-Bromofluorobenzene (S)	87.1		%	79 - 114		SW846 8260C			4/23/15 15:27	TMP	B
4-Bromofluorobenzene (S)	87.2		%	79 - 114		SW846 8260C			4/21/15 17:02	TMP	B
Dibromofluoromethane (S)	87.8		%	78 - 116		SW846 8260C			4/21/15 17:02	TMP	B
Dibromofluoromethane (S)	88.7		%	78 - 116		SW846 8260C			4/23/15 15:27	TMP	B
Toluene-d8 (S)	95.6		%	76 - 127		SW846 8260C			4/21/15 17:02	TMP	B
Toluene-d8 (S)	94.2		%	76 - 127		SW846 8260C			4/23/15 15:27	TMP	B
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			4/21/15 18:56	JSH	H
Ethene	ND		ug/L	2.4	0.40	RSK 175			4/21/15 18:56	JSH	H
Methane	ND		ug/L	1.5	0.34	RSK 175			4/21/15 18:56	JSH	H
WET CHEMISTRY											
Alkalinity, Total	36		mg/L	5	0.8	S2320B-97			4/18/15 05:04	MBW	E
Ammonia-nitrogen, Total	0.15J	J	mg/L	0.30	0.1	S4500NH3D	4/28/15	J1H	4/29/15 09:12	J1H	F
Chloride	11.1		mg/L	5.0	0.31	EPA 300.0	4/17/15	SSL	4/16/15 14:27	SSL	G
Nitrate-N	0.55		mg/L	0.50	0.092	EPA 300.0	4/17/15	SSL	4/16/15 14:27	SSL	G
Nitrite-N	ND	9	mg/L	0.20	0.044	EPA 300.0	4/16/15	SSL	4/17/15 18:46	SSL	G
Sulfate	3.9		mg/L	2.0	0.13	EPA 300.0	4/16/15	SSL	4/17/15 18:46	SSL	G

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2065603 TMM016|MRC-GW 2015 Sampling

Lab ID: **2065603011** Date Collected: 4/15/2015 12:45 Matrix: Ground Water

Sample ID: **MRC-MW-72B-041515** Date Received: 4/15/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Total Organic Carbon-Dissolved	1.5		mg/L	1.0	0.24	SW846 9060A			4/27/15 11:10	PAG	F
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 16:21	SUB	K

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

24902

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 2

Project Name: MRC-GW 2015 Sampling	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech 20251 Century BLVD Ste 200 Germantown, MD 20874	
Phone #: 301-528-3021	Email:
Sampler's Signature:	Sampler's Printed Name: Trevor Grandy

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE: 1 | 2 | 7 | 3 | 1

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	PCB's	1,4 DIOXANE	8104	Alkalinity	Cl, NO2, NO3, SO4	NH3	RSK-175	TOC	3	REMARKS/ ALTERNATE DESCRIPTION
MRC-MW-43A-041415		4-14-15	0820	GW	2								X									
MRC-MW-44A-041415			0955		3								X	X								
MRC-MW-103A-041415			1130		2								X									
MRC-MW-103B-041415			1230		2								X									
MRC-MW-118A-041415			1510		6	X							X	X								
MRC-MW-16A-041515		4/15/15	1245		5	X					X			X								
MRC-MW-15A-041515			1425		2						X			X								
MRC-MW-33A-041515			0855		4	X					X											
MRC-MW-31A-041515			1005		1						X											
MRC-MW-30A-041515			1110		1						X											
MRC-MW-72B-041515			1245		11	X									X	X	X	X	X	X		

SPECIAL INSTRUCTIONS/COMMENTS

Metals

48 Hr Hold Time For NH3 Parameters

See QAPP ☐

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

____ 1 day ____ 2 day ____ 3 day

____ 4 day ____ 5 day

Standard

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION

PO #

BILL TO:

STATE WHERE SAMPLES WERE COLLECTED

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Trevor Grandy	Printed Name: Lawrence Lawson	Printed Name	Printed Name	Printed Name	Printed Name
Firm: TT GEO	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 4/15/15 - 1520	Date/Time: 4/15/15 1520	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

24903

ALS Environmental
1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax)

Project Name: MRC-GW 2015 Sampling	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech 20251 Century BLVD S/e 200 Germantown MD 20874	
Phone #: 301-528-3021	Email:
Sampler's Signature:	Sampler's Printed Name: Trevor Grandy

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
MRC-MW-73B-041515		4/15/15	1415	GW	3	X							

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS
Metals

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____Yes _____No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Trevor Grandy	Printed Name: ACS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Tetra Tech GEO	Firm: Lawrence Laboratories	Firm	Firm	Firm	Firm
Date/Time: 4/15/15 - 1520	Date/Time: 4/15/15 1520	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-016

Sample Management

This report contains the results of the analysis of thirteen (13) ground water samples collected on April 14-15, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 15, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

One (1) sample was subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Eight (8) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2167095, bromomethane was detected at 0.67J µg/L.
- In 2168253, bromomethane was detected at 0.62J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2167096, cis-1,3-dichloropropene was recovered below the control limits.
- In 2168254, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2167151 and 2167152, was prepared from project sample MRC-MW-72B-041515(2065603011). Results for precision and accuracy were within control limits; except as follows:

- In 2167151, cis-1,3-dichloropropene and trichloroethene were recovered below the control limits; trans-1,2-dichloroethene and methyl cyclohexane were recovered above the control limits.
- In 2167152, cis-1,3-dichloropropene was recovered below the control limits; methyl cyclohexane and trichloroethene were recovered above the control limits.

Internal Standards. All internal standard results met method criteria.

<u>1,4-Dioxane by Method 522</u>

Sample Handling. Five (5) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

<u>Polychlorinated Biphenyls as Aroclors Method 8082</u>

Sample Handling. Five (5) water samples were extracted by SW-846 Method 3510 and analyzed for PCBs by SW-846 Method 8082. The extractions and analyses were performed within the holding times associated with each method.

Reporting. The samples were analyzed using dual-column instrumentation. Detected analytes were reported from the column yielding the lower result, unless quality control data or poor chromatography warranted the selection of the higher result.

If the difference in results above the reporting limit between the two columns exceeds 40% RPD, and that difference cannot be explained by matrix interferences evident from the chromatography, the results are qualified on the Certificate of Analysis.

Initial Calibrations. Prior to sample analysis, initial calibrations were performed and verified with an initial calibration verification standard. All results met method criteria.

Calibration verification. The initial calibration was verified prior to sample analysis and every 12 hours, thereafter. The average peak concentration results for each Aroclor were within control limits.

Blanks. Target analytes were not detected in the method blank.

Surrogates. All surrogate results were within control limits.

Spiked Blanks. Target analytes were recovered within control limits in both analytical columns.

Light Hydrocarbon Gases by RSK-175

Sample Handling. One (1) water samples was submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2167216, was analyzed from project sample MRC-MW-72B-041515 (2065603011). Light hydrocarbon gases were not detected above the reporting limit.

Total Metals by SW-846 Method 6020A

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.00142 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was prepared on sample 2065603009 in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury by EPA Method 7470A

Sample handling. Five (5) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. One (1) aqueous sample was analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The sample was distilled and analyzed within the 28-day holding time established for the method.

Calibration. An initial calibration was properly established on the day of analysis and a second source standard was analyzed throughout the analysis to verify the calibration. The recoveries were within the QC limits.

Blank. A preparation blank, identified as 2170002, was distilled and analyzed with the sample. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. A laboratory control sample, identified as 2170003, was distilled and analyzed with the sample. The recovery was within QC limits.

Anions by EPA 300.0

Sample handling. One (1) aqueous sample was analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The sample was run within method recommended holding time for chloride, nitrate-nitrogen, and sulfate. The sample was originally run within method recommended holding time for nitrite-nitrogen, but required further analysis that exceeded that holding time.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limits.

Blanks. Initial and continuing blanks were analyzed with the sample. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2165544, 2164899 and SSL, were analyzed initially and every 20 samples. Recoveries were within the QC limits.

Dissolved Total Organic Carbon by SW-846 9060A

Sample handling. One (1) aqueous sample was analyzed for dissolved total organic carbon by SW-846 Method 9060A. The sample was analyzed within the 28-day holding time established for the method.

Calibration. On the day of analysis, a four-point low curve calibration was properly established, and initial and continuing calibration standards were analyzed throughout the run. The recoveries were all within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the sample. Total organic carbon was not detected above the reporting limit in the blanks.

A dissolved TOC blank, identified as DISS. BLANK, was analyzed with the sample. Dissolved total organic carbon was not detected above the reporting limit in the blank.

Laboratory Control Samples. A dissolved TOC laboratory control sample, identified as 5.0 QC DISS., was analyzed with the sample. The recovery was within the QC limits.

Total Alkalinity by SM 2320B

Sample handling. One (1) aqueous sample was analyzed for total alkalinity by Standard Method 2320B. The sample was analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the sample. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 5/5/2015

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2065603 TMM016|MRC-GW 2015 Sampling

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2065603001	MRC-MW-43A-041415	Ground Water	4/14/2015 08:20	4/15/2015 20:50	Collected by Client
2065603002	MRC-MW-44A-041415	Ground Water	4/14/2015 09:55	4/15/2015 20:50	Collected by Client
2065603003	MRC-MW-103A-041415	Ground Water	4/14/2015 11:30	4/15/2015 20:50	Collected by Client
2065603004	MRC-MW-103B-041415	Ground Water	4/14/2015 12:30	4/15/2015 20:50	Collected by Client
2065603005	MRC-MW-114A-041415	Ground Water	4/14/2015 15:10	4/15/2015 20:50	Collected by Client
2065603006	MRC-MW-16A-041515	Ground Water	4/15/2015 12:45	4/15/2015 20:50	Collected by Client
2065603007	MRC-MW-15A-041515	Ground Water	4/15/2015 14:25	4/15/2015 20:50	Collected by Client
2065603008	MRC-MW-33A-041515	Ground Water	4/15/2015 08:55	4/15/2015 20:50	Collected by Client
2065603009	MRC-MW-31A-041515	Ground Water	4/15/2015 10:05	4/15/2015 20:50	Collected by Client
2065603010	MRC-MW-30A-041515	Ground Water	4/15/2015 11:10	4/15/2015 20:50	Collected by Client
2065603011	MRC-MW-72B-041515	Ground Water	4/15/2015 12:45	4/15/2015 20:50	Collected by Client
2065603012	MRC-MW-73B-041515	Ground Water	4/15/2015 14:15	4/15/2015 20:50	Collected by Client
2065603013	Trip Blank	Ground Water	4/15/2015 20:50	4/15/2015 20:50	Collected by Client

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2065603 TMM016|MRC-GW 2015 Sampling

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-016

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2165640(LCS)	92.9	82.4	90.5	88.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-016

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2167095(MB)	85.2	87.2	101	98.3	0
03	2167096(LCS)	84.0	81.6	92.4	84.2	0
04	Trip Blank	88.5	89.4	106	93.0	0
05	MRC-MW-114A-041415	80.8	81.0	102	80.9	0
06	MRC-MW-72B-041515	87.2	87.8	105	95.6	0
07	MRC-MW-72B-04...MS	82.9	85.3	96.1	85.8	0
08	MRC-MW-72B-0...MSD	85.8	81.7	91.0	86.1	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-016

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
09	2168253(MB)	88.2	87.7	104	94.9	0
10	2168254(LCS)	85.0	84.1	95.4	87.1	0
11	MRC-MW-16A-041515	90.0	88.0	102	93.0	0
12	MRC-MW-33A-041515	88.5	89.7	106	95.0	0
13	MRC-MW-73B-041515	88.5	92.1	109	99.5	0
14	MRC-MW-114A-041415-DL10	88.7	88.3	105	91.1	0
15	MRC-MW-72B-041515-DL100	87.1	88.7	106	94.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Lab File ID: 15041707.D Date Analyzed: 4/17/2015

Instrument ID: ms15.i Time Analyzed: 11:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	393536	5.913	362552	7.686	921216	3.910
UPPER LIMIT	787072	6.413	725104	8.186	1842432	4.410
LOWER LIMIT	196768	5.413	181276	7.186	460608	3.410
SAMPLE NO.						
2165640(LCS)	389068	5.912	362447	7.686	881867	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Lab File ID: 15042102.D Date Analyzed: 4/21/2015

Instrument ID: ms15.i Time Analyzed: 10:19

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	400238	5.912	370616	7.686	895881	3.910
UPPER LIMIT	800476	6.412	741232	8.186	1791762	4.410
LOWER LIMIT	200119	5.412	185308	7.186	447941	3.410
SAMPLE NO.						
1800	400238	5.912	370616	7.686	895881	3.910
2167095(MB)	279576	5.912	225775	7.686	732635	3.910
2167096(LCS)	375511	5.913	339659	7.686	834965	3.910
Trip Blank	283593	5.913	218228	7.686	710042	3.910
MRC-MW-114A-04141	333146	5.912	268261	7.686	787689	3.910
MRC-MW-72B-041515	293528	5.912	233942	7.686	740256	3.910
MRC-MW-72B-04...M	374993	5.912	347089	7.686	811522	3.910
MRC-MW-72B-0...MS	387294	5.913	348469	7.686	865778	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Lab File ID: 15042302.D Date Analyzed: 4/23/2015

Instrument ID: ms15.i Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	390234	5.912	359420	7.680	891295	3.910
UPPER LIMIT	780468	6.412	718840	8.180	1782590	4.410
LOWER LIMIT	195117	5.412	179710	7.180	445648	3.410
SAMPLE NO.						
1800	390234	5.912	359420	7.680	891295	3.910
2168253(MB)	297853	5.913	231105	7.686	726287	3.910
2168254(LCS)	365551	5.913	329106	7.686	807783	3.910
MRC-MW-16A-041515	308367	5.913	230509	7.686	749881	3.910
MRC-MW-33A-041515	285929	5.912	214570	7.686	706790	3.910
MRC-MW-73B-041515	278327	5.913	220124	7.686	696243	3.910
MRC-MW-114A-04141	275990	5.913	213637	7.686	699549	3.910
MRC-MW-72B-041515	267095	5.912	209362	7.686	690190	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2167095

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-016

Lab File ID: 15042105.D Lab Sample ID: 2167095

Date Analyzed: 4/21/2015 Time Analyzed: 11:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2167096(LCS)	2167096	15042106.D	12:01
Trip Blank	2065603013	15042117.D	15:19
MRC-MW-114A-041415	2065603005	15042120.D	16:10
MRC-MW-72B-041515	2065603011	15042123.D	17:02
MRC-MW-72B-04...MS	2167151	15042125.D	17:36
MRC-MW-72B-0...MSD	2167152	15042126.D	17:53

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.67	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		106	106	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.3	106	(73-117)
Bromodichloromethane	20.0		20.6	103	(79-126)
Bromoform	20.0		17.0	85.2	(70-123)
Bromomethane	20.0		24.5	123	(45-148)
2-Butanone	100		99.5	99.5	(50-152)
Carbon Disulfide	20.0		21.2	106	(57-131)
Carbon Tetrachloride	20.0		21.6	108	(62-132)
Chlorobenzene	20.0		20.6	103	(85-117)
Chlorodibromomethane	20.0		16.8	84.1	(77-122)
Chloroethane	20.0		19.2	96.2	(51-142)
Chloroform	20.0		21.4	107	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		20.8	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.6	93	(59-133)
1,2-Dibromoethane	20.0		19.8	98.8	(80-124)
1,2-Dichlorobenzene	20.0		20.6	103	(82-118)
1,3-Dichlorobenzene	20.0		21.5	107	(81-118)
1,4-Dichlorobenzene	20.0		20.3	102	(81-116)
Dichlorodifluoromethane	20.0		20.8	104	(17-166)
1,1-Dichloroethane	20.0		20.6	103	(78-124)
1,2-Dichloroethane	20.0		21.1	105	(70-133)
1,1-Dichloroethene	20.0		22.7	113	(63-128)
cis-1,2-Dichloroethene	20.0		20.8	104	(78-125)
trans-1,2-Dichloroethen	20.0		22.8	114	(71-122)
1,2-Dichloropropane	20.0		21.2	106	(81-127)
cis-1,3-Dichloropropene	20.0		16.2	80.9*	(81-121)
trans-1,3-Dichloroprope	20.0		17.2	85.9	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

ok

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		464	92.8	(1-280)
Ethylbenzene	20.0		19.0	95.1	(80-124)
Freon 113	20.0		22.4	112	(50-130)
2-Hexanone	100		85.1	85.1	(65-154)
Isopropylbenzene	20.0		17.4	86.8	(73-129)
Methyl acetate	20.0		19.5	97.3	(70-130)
Methyl cyclohexane	20.0		20.8	104	(70-130)
Methyl t-Butyl Ether	20.0		19.4	97	(69-115)
4-Methyl-2-Pentanone(MI	100		91.4	91.4	(71-146)
Methylene Chloride	20.0		23.4	117	(76-121)
Styrene	20.0		18.1	90.4	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.8	104	(72-124)
Toluene	20.0		19.1	95.5	(80-125)
1,2,3-Trichlorobenzene	20.0		17.5	87.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.2	81.2	(67-123)
1,1,1-Trichloroethane	20.0		21.6	108	(66-130)
1,1,2-Trichloroethane	20.0		19.3	96.5	(82-126)
Trichloroethene	20.0		21.1	106	(77-124)
Trichlorofluoromethane	20.0		19.9	99.4	(38-123)
Vinyl Chloride	20.0		20.0	100	(27-138)
o-Xylene	20.0		16.0	80.2	(79-124)
mp-Xylene	40.0		37.1	92.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix Spike - Sample No: MRC-MW-72B-04...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
Acetone	100	0	100	100	(40-151)
Benzene	20.0	0	23.4	117	(80-124)
Bromochloromethane	20.0	0	22.2	111	(73-117)
Bromodichloromethane	20.0	0	21.5	108	(79-126)
Bromoform	20.0	0	16.3	81.6	(70-123)
Bromomethane	20.0	0.47	26.2	129	(45-148)
2-Butanone	100	0	84.6	84.6	(50-152)
Carbon Disulfide	20.0	0	22.8	114	(57-131)
Carbon Tetrachloride	20.0	0	24.3	121	(62-132)
Chlorobenzene	20.0	0.26	21.5	106	(85-117)
Chlorodibromomethane	20.0	0	16.3	81.5	(77-122)
Chloroethane	20.0	0	21.3	107	(51-142)
Chloroform	20.0	0	22.1	111	(78-122)
Chloromethane	20.0	0	22.6	113	(38-156)
Cyclohexane	20.0	0	23.0	115	(66-130)
1,2-Dibromo-3-chloropropane	20.0	0	17.5	87.7	(59-133)
1,2-Dibromoethane	20.0	0	19.6	98.2	(80-124)
1,2-Dichlorobenzene	20.0	0	19.8	99.2	(82-118)
1,3-Dichlorobenzene	20.0	0	21.2	106	(81-118)
1,4-Dichlorobenzene	20.0	0	20.1	101	(81-116)
Dichlorodifluoromethane	20.0	0	22.6	113	(17-166)
1,1-Dichloroethane	20.0	0	22.7	114	(78-124)
1,2-Dichloroethane	20.0	0	21.6	108	(70-133)
1,1-Dichloroethene	20.0	0	25.0	125	(63-128)
cis-1,2-Dichloroethene	20.0	2.4	24.8	112	(78-125)
trans-1,2-Dichloroethene	20.0	0	25.1	126*	(71-122)
1,2-Dichloropropane	20.0	0	22.4	112	(81-127)
cis-1,3-Dichloropropene	20.0	0	15.5	77.7*	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 4 out of 52 outside limits

Comments:

3A

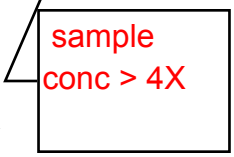
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix Spike - Sample No: MRC-MW-72B-04...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
trans-1,3-Dichloropropene	20.0	0	17.2	86	(78-126)
1,4-Dioxane	500	0	459	91.9	(1-280)
Ethylbenzene	20.0	0	19.9	99.5	(80-124)
Freon 113	20.0	1.3	25.8	122	(50-130)
2-Hexanone	100	0	83.3	83.3	(65-154)
Isopropylbenzene	20.0	0	17.6	88.1	(73-129)
Methyl acetate	20.0	0	18.1	90.6	(70-130)
Methyl cyclohexane	20.0	0	51.5	258*	(70-130)
Methyl t-Butyl Ether	20.0	0	19.8	99.2	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	0	91.0	91	(71-146)
Methylene Chloride	20.0	0	23.6	118	(76-121)
Styrene	20.0	0	18.2	90.8	(79-123)
1,1,2,2-Tetrachloroethane	20.0	0	18.7	93.6	(74-135)
Tetrachloroethene	20.0	0.66	21.5	104	(72-124)
Toluene	20.0	0	20.3	101	(80-125)
1,2,3-Trichlorobenzene	20.0	0	16.5	82.5	(61-126)
1,2,4-Trichlorobenzene	20.0	0	16.3	81.4	(67-123)
1,1,1-Trichloroethane	20.0	0	23.6	118	(66-130)
1,1,2-Trichloroethane	20.0	0	19.2	95.9	(82-126)
Trichloroethene	20.0	2020	1800	-1100.	(77-124)
Trichlorofluoromethane	20.0	0	21.7	108	(38-123)
Vinyl Chloride	20.0	0	22.8	114	(27-138)
o-Xylene	20.0	0	16.8	83.8	(79-124)
mp-Xylene	40.0	0	38.8	97.1	(79-125)



Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 4 out of 52 outside limits

Comments:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix Spike - Sample No: MRC-MW-72B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
Acetone	100	98.5	98.5	1	40	(40-151)
Benzene	20.0	22.6	113	3	26	(80-124)
Bromochloromethane	20.0	21.6	108	3	19	(73-117)
Bromodichloromethane	20.0	21.1	106	2	16	(79-126)
Bromoform	20.0	16.7	83.4	2	16	(70-123)
Bromomethane	20.0	26.2	129	0	26	(45-148)
2-Butanone	100	97.4	97.4	14	16	(50-152)
Carbon Disulfide	20.0	22.7	114	1	28	(57-131)
Carbon Tetrachloride	20.0	23.2	116	5	17	(62-132)
Chlorobenzene	20.0	21.2	105	1	15	(85-117)
Chlorodibromomethane	20.0	16.6	82.8	2	15	(77-122)
Chloroethane	20.0	21.6	108	1	24	(51-142)
Chloroform	20.0	21.2	106	4	16	(78-122)
Chloromethane	20.0	22.6	113	0	27	(38-156)
Cyclohexane	20.0	22.5	112	2	20	(66-130)
1,2-Dibromo-3-chloropropane	20.0	17.3	86.6	1	26	(59-133)
1,2-Dibromoethane	20.0	19.5	97.6	1	19	(80-124)
1,2-Dichlorobenzene	20.0	20.5	102	3	15	(82-118)
1,3-Dichlorobenzene	20.0	21.7	108	2	16	(81-118)
1,4-Dichlorobenzene	20.0	20.6	103	2	15	(81-116)
Dichlorodifluoromethane	20.0	22.9	115	1	24	(17-166)
1,1-Dichloroethane	20.0	21.5	108	5	15	(78-124)
1,2-Dichloroethane	20.0	20.7	104	4	19	(70-133)
1,1-Dichloroethene	20.0	24.1	120	4	21	(63-128)
cis-1,2-Dichloroethene	20.0	24.1	109	3	21	(78-125)
trans-1,2-Dichloroethene	20.0	24.2	121	4	22	(71-122)
1,2-Dichloropropane	20.0	21.8	109	3	15	(81-127)
cis-1,3-Dichloropropene	20.0	15.7	78.6*	1	16	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

3A

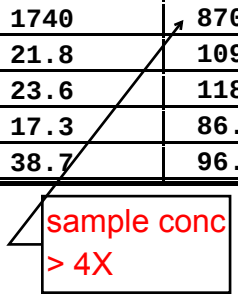
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix Spike - Sample No: MRC-MW-72B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
trans-1,3-Dichloropropene	20.0	17.1	85.4	1	18	(78-126)
1,4-Dioxane	500	472	94.4	3	40	(1-280)
Ethylbenzene	20.0	19.8	99.1	0	19	(80-124)
Freon 113	20.0	24.8	117	4	26	(50-130)
2-Hexanone	100	84.0	84	1	17	(65-154)
Isopropylbenzene	20.0	18.3	91.7	4	18	(73-129)
Methyl acetate	20.0	17.4	87.2	4	18	(70-130)
Methyl cyclohexane	20.0	50.8	254*	1	18	(70-130)
Methyl t-Butyl Ether	20.0	19.4	97	2	20	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	90.8	90.8	0	16	(71-146)
Methylene Chloride	20.0	23.4	117	1	17	(76-121)
Styrene	20.0	18.5	92.5	2	16	(79-123)
1,1,2,2-Tetrachloroethane	20.0	19.0	94.9	1	16	(74-135)
Tetrachloroethene	20.0	21.5	104	0	38	(72-124)
Toluene	20.0	20.1	100	1	20	(80-125)
1,2,3-Trichlorobenzene	20.0	17.1	85.3	3	36	(61-126)
1,2,4-Trichlorobenzene	20.0	17.1	85.6	5	22	(67-123)
1,1,1-Trichloroethane	20.0	22.9	114	3	20	(66-130)
1,1,2-Trichloroethane	20.0	19.3	96.7	1	15	(82-126)
Trichloroethene	20.0	1740	8700*	3	18	(77-124)
Trichlorofluoromethane	20.0	21.8	109	1	23	(38-123)
Vinyl Chloride	20.0	23.6	118	3	40	(27-138)
o-Xylene	20.0	17.3	86.3	3	19	(79-124)
mp-Xylene	40.0	38.7	96.8	0	21	(79-125)



Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168253

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-016

Lab File ID: 15042305.D Lab Sample ID: 2168253

Date Analyzed: 4/23/2015 Time Analyzed: 12:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168254(LCS)	2168254	15042306.D	12:51
MRC-MW-16A-041515	2065603006	15042308.D	13:27
MRC-MW-33A-041515	2065603008	15042309.D	13:44
MRC-MW-73B-041515	2065603012	15042310.D	14:02
MRC-MW-114A-041415-DL	2065603005	15042313.D	14:53
MRC-MW-72B-041515-DL1	2065603011	15042315.D	15:27

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.62	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		110	110	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.5	112	(73-117)
Bromodichloromethane	20.0		21.6	108	(79-126)
Bromoform	20.0		16.9	84.5	(70-123)
Bromomethane	20.0		27.2	136	(45-148)
2-Butanone	100		98.9	98.9	(50-152)
Carbon Disulfide	20.0		24.0	120	(57-131)
Carbon Tetrachloride	20.0		23.2	116	(62-132)
Chlorobenzene	20.0		21.5	108	(85-117)
Chlorodibromomethane	20.0		17.1	85.3	(77-122)
Chloroethane	20.0		21.9	109	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		20.8	104	(38-156)
Cyclohexane	20.0		22.4	112	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.4	92.2	(59-133)
1,2-Dibromoethane	20.0		20.2	101	(80-124)
1,2-Dichlorobenzene	20.0		21.2	106	(82-118)
1,3-Dichlorobenzene	20.0		22.3	112	(81-118)
1,4-Dichlorobenzene	20.0		21.1	106	(81-116)
Dichlorodifluoromethane	20.0		20.9	105	(17-166)
1,1-Dichloroethane	20.0		23.5	117	(78-124)
1,2-Dichloroethane	20.0		22.1	110	(70-133)
1,1-Dichloroethene	20.0		24.8	124	(63-128)
cis-1,2-Dichloroethene	20.0		22.9	115	(78-125)
trans-1,2-Dichloroethen	20.0		26.0	130*	(71-122)
1,2-Dichloropropane	20.0		22.3	111	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.5	(81-121)
trans-1,3-Dichloroprope	20.0		17.8	89.2	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		475	95	(1-280)
Ethylbenzene	20.0		20.3	102	(80-124)
Freon 113	20.0		23.8	119	(50-130)
2-Hexanone	100		87.9	87.9	(65-154)
Isopropylbenzene	20.0		18.4	92.1	(73-129)
Methyl acetate	20.0		21.5	108	(70-130)
Methyl cyclohexane	20.0		22.5	112	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		94.8	94.8	(71-146)
Methylene Chloride	20.0		25.7	129*	(76-121)
Styrene	20.0		19.2	96	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.7	98.6	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.5	103	(80-125)
1,2,3-Trichlorobenzene	20.0		17.6	88.1	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		23.5	117	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.4	(82-126)
Trichloroethene	20.0		23.3	116	(77-124)
Trichlorofluoromethane	20.0		20.8	104	(38-123)
Vinyl Chloride	20.0		21.5	107	(27-138)
o-Xylene	20.0		16.9	84.4	(79-124)
mp-Xylene	40.0		39.6	98.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-016

Lab File ID: 15041700.D BFB Injection Date: 4/17/2015

Instrument ID: ms15.i BFB Injection Time: 09:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.3
175	5.0 - 9.0% of mass 174	5.7 (7.0) 1
176	95.0 - 101.0% of mass 174	77.6 (95.4) 1
177	5.0 - 9.0% of mass 176	5.0 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15041703.D	4/17/2015	10:39
1234	1234	15041704.D	4/17/2015	10:56
1235	1235	15041705.D	4/17/2015	11:13
1236	1236	15041706.D	4/17/2015	11:31
1237	1237	15041707.D	4/17/2015	11:48
1238	1238	15041708.D	4/17/2015	12:05
1239	1239	15041709.D	4/17/2015	12:23
2165640(LCS)	2165640	15041714.D	4/17/2015	13:49

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02150			A		0.025420		13.35269
Acrolein	0.04346	0.04700		A		0.046870		8.87083
Acrylonitrile	0.09374	0.09420		A		0.101720		10.11420
Acetonitrile	0.02968			A		0.036650		13.39134
tert-Amyl Ethylether	4213141	4951		L	0.000000	1.627200		0.99780
tert-Amyl methyl ether	5133616	5851		L	0.000000	1.323550		0.99917
tert-Amyl Alcohol	601293	704		L	0.000000	56.396912		0.99814
Benzene	1.27434	1.10894		A		1.241190		10.58614
Benzyl Chloride				Q	0.000000	0.143690	0.029740	0.99991
Bromobenzene	0.97604	0.74747		A		0.902000		14.84422
Bromochloromethane	0.15243	0.14604		A		0.163350		10.25949
Bromodichloromethane	0.44080	0.33394		A		0.392350		13.81932
Bromoform *	1338355	1232		Q	0.000000	0.435990	0.009530	0.99971
Bromomethane	1075271			L	0.000000	6.218590		0.99848
2-Butanone	0.03713			A		0.037740		12.55237
tert.- Butyl Alcohol	0.02376			A		0.024770		7.01068
tert-Butylbenzene	2073194	1739		L	0.000000	1.297790		0.99982
n-Butylbenzene	2204415			L	0.000000	1.224140		0.99935
sec-Butylbenzene	10720671	7378		L	0.000000	0.250660		0.99977
Carbon Disulfide	0.75980	0.60853		A		0.664000		10.57539
Carbon Tetrachloride	0.40632	0.28418		A		0.362980		13.42907
Chloroacetonitrile	325006			Q	0.000000	0.022800	-0.000010	0.99965
Chlorobenzene *	2.19164	1.87636		A		2.138210		9.16523
1-Chlorobutane	0.30442	0.27544		A		0.301730		10.02872
Chlorodibromomethane	2229887	2646		L	0.000000	1.320690		0.99897
Chloroethane	0.20128			A		0.238640		11.97155
2-Chloroethylvinyl ether	0.14061			A		0.128220		10.02306
Chloroform **	3904606	18104		Q	0.030370	0.575280	0.000060	0.99967
1-Chlorohexane	2878567	2684		L	0.000000	1.022160		0.99867
Chloromethane *	0.42875			A		0.515330		14.85648
Chloroprene	0.41952	0.36738		A		0.407690		10.34581
3-Chloro-1-propene	0.29246	0.30678		A		0.314290		6.84089
o-Chlorotoluene	8134248	7088		L	0.000000	0.331320		0.99982
p-Chlorotoluene	7603192	5801		L	0.000000	0.354900		0.99977
Cyclohexane	2984728	4171		L	0.000000	2.262420		0.99982
1,2-Dibromo-3-Chloropropane	0.14266	0.09901		A		0.128270		11.53273

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.65129	0.54870		A		0.613510		11.23085
Dibromomethane	0.19172	0.18388		A		0.192910		6.75287
trans-1,4-Dichloro-2-butene	635655	649		L	0.000000	4.160080		0.99863
1,2-Dichlorobenzene	1.78231	1.55402		A		1.690540		9.20938
1,3-Dichlorobenzene	1.82595	1.40511		A		1.714790		12.13976
1,4-Dichlorobenzene	1.85978	1.89440		A		1.869510		5.23051
Dichlorodifluoromethane	0.39025			A		0.440580		10.81630
1,1-Dichloroethane *		0.53864		A		0.565720		7.47475
1,2-Dichloroethene, Total	5300341	9644		L	0.000000	2.545260		0.99960
1,2-Dichloroethane	0.40364	0.41141		A		0.430720		8.19580
1,1-Dichloroethene **	0.38202	0.39648		A		0.398900		6.23044
cis-1,2-Dichloroethene	0.41233	0.36831		A		0.404200		8.14800
trans-1,2-Dichloroethene	0.37614	0.37806		A		0.388220		7.20134
Dichlorofluoromethane	0.54189	0.61008		A		0.574180		8.04570
1,1-Dichloro-2-Propanone	207685			L	0.000000	69.396950		0.99911
2,2-Dichloropropane	0.36550	0.30570		A		0.332710		9.13718
1,3-Dichloropropane	1.20820	0.99315		A		1.169770		9.65596
1,2-Dichloropropane **	0.33277	0.29602		A		0.317840		9.42977
1,1-Dichloropropene	0.40589	0.33603		A		0.378320		11.86754
cis-1,3-Dichloropropene	3487668	3447		L	0.000000	0.846900		0.99846
trans-1,3-Dichloropropene	3142276	2943		L	0.000000	0.933700		0.99934
1,3-Dichloropropene, Total	6629944	6390		L	0.000000	0.888180		0.99894
Diisobutylene	4686812	32902		L	0.000000	1.435930		0.99976
Diisopropyl ether	0.83077	0.79937		A		0.844300		8.28498
1,4-Dioxane	0.00340			A		0.003300		12.26198
Ethyl Acetate	0.25207	0.25137		A		0.254670		8.19100
Ethyl ether	0.18507	0.19464		A		0.190110		7.07916
Ethyl Methacrylate	2846887	2359		L	0.000000	1.026370		0.99940
Ethyl tert-butyl ether	5580280	7541		L	0.000000	1.203310		0.99983
Ethylbenzene **	3394435	3836		L	0.000000	0.861550		0.99977
Freon 113	0.25000	0.32164		A		0.273740		9.74960
Heptane	1405405	1707		L	0.000000	4.824340		0.99835
Hexachlorobutadiene	0.47840	0.42810		A		0.431370		10.14694
Hexachloroethane	1598514	1616		L	0.000000	1.713730		0.99725
Hexane	0.47877	0.53586		A		0.483430		5.95882
2-Hexanone	6265115	6303		L	0.000000	2.275700		0.99798

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8816753	4948		L	0.000000	0.305930		0.99972
1,3,5-Trimethylbenzene	8637632	5644		L	0.000000	0.312070		0.99981
Vinyl Acetate	431185	521		L	0.000000	15.534290		0.99979
Vinyl Chloride **	0.36981			A		0.390360		7.18993
o-Xylene	4059055	3537		L	0.000000	0.725160		0.99896
mp-Xylene	8374675	8101		L	0.000000	0.699710		0.99963
4-Bromofluorobenzene		4420		L	0.000000	1.162640		0.99966
Dibromofluoromethane				A		0.336800		13.41450
1,2-Dichloroethane-d4	2270423			L	0.000000	2.961950		0.99888
Toluene-d8				A		2.577610		9.74042

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		96.5	96.5	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.2	106	(73-117)
Bromodichloromethane	20.0		20.3	101	(79-126)
Bromoform	20.0		17.1	85.5	(70-123)
Bromomethane	20.0		19.9	99.5	(45-148)
2-Butanone	100		102	102	(50-152)
Carbon Disulfide	20.0		20.9	105	(57-131)
Carbon Tetrachloride	20.0		21.3	106	(62-132)
Chlorobenzene	20.0		20.5	103	(85-117)
Chlorodibromomethane	20.0		17.0	84.9	(77-122)
Chloroethane	20.0		16.7	83.6	(51-142)
Chloroform	20.0		21.0	105	(78-122)
Chloromethane	20.0		19.2	96.2	(38-156)
Cyclohexane	20.0		20.7	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.3	91.6	(59-133)
1,2-Dibromoethane	20.0		20.3	101	(80-124)
1,2-Dichlorobenzene	20.0		19.9	99.4	(82-118)
1,3-Dichlorobenzene	20.0		21.1	105	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.5	(81-116)
Dichlorodifluoromethane	20.0		18.2	91.1	(17-166)
1,1-Dichloroethane	20.0		20.5	103	(78-124)
1,2-Dichloroethane	20.0		20.9	104	(70-133)
1,1-Dichloroethene	20.0		21.6	108	(63-128)
cis-1,2-Dichloroethene	20.0		21.2	106	(78-125)
trans-1,2-Dichloroethen	20.0		22.0	110	(71-122)
1,2-Dichloropropane	20.0		20.7	103	(81-127)
cis-1,3-Dichloropropene	20.0		16.7	83.3	(81-121)
trans-1,3-Dichloroprope	20.0		17.7	88.4	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-016

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		502	100	(1-280)
Ethylbenzene	20.0		19.0	94.9	(80-124)
Freon 113	20.0		21.2	106	(50-130)
2-Hexanone	100		93.0	93	(65-154)
Isopropylbenzene	20.0		17.3	86.4	(73-129)
Methyl acetate	20.0		20.6	103	(70-130)
Methyl cyclohexane	20.0		21.8	109	(70-130)
Methyl t-Butyl Ether	20.0		19.6	97.9	(69-115)
4-Methyl-2-Pentanone(MI	100		97.8	97.8	(71-146)
Methylene Chloride	20.0		22.0	110	(76-121)
Styrene	20.0		18.0	90	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.5	102	(72-124)
Toluene	20.0		19.5	97.3	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.6	83	(67-123)
1,1,1-Trichloroethane	20.0		21.5	108	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.1	(82-126)
Trichloroethene	20.0		21.2	106	(77-124)
Trichlorofluoromethane	20.0		18.6	92.8	(38-123)
Vinyl Chloride	20.0		19.3	96.6	(27-138)
o-Xylene	20.0		17.0	84.9	(79-124)
mp-Xylene	40.0		37.5	93.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-016

Lab File ID: 15042100.D BFB Injection Date: 4/21/2015

Instrument ID: ms15.i BFB Injection Time: 09:40

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.0
75	30.0 - 60.0% of mass 95	50.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.5
175	5.0 - 9.0% of mass 174	5.5 (6.9) 1
176	95.0 - 101.0% of mass 174	76.8 (96.6) 1
177	5.0 - 9.0% of mass 176	5.2 (6.8) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042102.D	4/21/2015	10:19
2167095(MB)	2167095	15042105.D	4/21/2015	11:44
2167096(LCS)	2167096	15042106.D	4/21/2015	12:01
Trip Blank	2065603013	15042117.D	4/21/2015	15:19
MRC-MW-114A-041415	2065603005	15042120.D	4/21/2015	16:10
MRC-MW-72B-041515	2065603011	15042123.D	4/21/2015	17:02
MRC-MW-72B-04...MS	2167151	15042125.D	4/21/2015	17:36
MRC-MW-72B-0...MSD	2167152	15042126.D	4/21/2015	17:53

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0230			-9.4	100.0	A
Acrolein	0.0469	0.0446			-4.8	100.0	A
Acrylonitrile	0.1017	0.0931			-8.5	100.0	A
Acetonitrile	0.0366	0.0308			-15.9	100.0	A
tert-Amyl Ethylether	50.0000		41.8644		-16.3	100.0	L
tert-Amyl methyl ether	50.0000		43.2388		-13.5	100.0	L
tert-Amyl Alcohol	250		186		-25.6	100.0	L
Benzene	1.2412	1.2224			-1.5	100.0	A
Benzyl Chloride	50.0000		48.2603		-3.5	100.0	Q
Bromobenzene	0.9020	0.9001			-0.2	100.0	A
Bromochloromethane	0.1634	0.1605			-1.8	100.0	A
Bromodichloromethane	0.3923	0.3986			1.6	100.0	A
Bromoform	50.0000		43.5899	0.100	-12.8	100.0	Q
Bromomethane	50.0000		53.0635		6.1	100.0	L
2-Butanone	0.0377	0.0341			-9.5	100.0	A
tert.- Butyl Alcohol	0.0248	0.0217			-12.5	100.0	A
tert-Butylbenzene	50.0000		44.8853		-10.2	100.0	L
n-Butylbenzene	50.0000		43.4919		-13.0	100.0	L
sec-Butylbenzene	50.0000		44.8330		-10.3	100.0	L
Carbon Disulfide	0.6640	0.5975			-10.0	100.0	A
Carbon Tetrachloride	0.3630	0.3636			0.2	100.0	A
Chloroacetonitrile	250		214		-14.2	100.0	Q
Chlorobenzene	2.1382	2.0488		0.300	-4.2	100.0	A
1-Chlorobutane	0.3017	0.2930			-2.9	100.0	A
Chlorodibromomethane	50.0000		42.3914		-15.2	100.0	L
Chloroethane	0.2386	0.2209			-7.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0875			-31.7	100.0	A
Chloroform	50.0000		48.7596		-2.5	20.0	Q
1-Chlorohexane	50.0000		41.9029		-16.2	100.0	L
Chloromethane	0.5153	0.4229		0.100	-17.9	100.0	A
Chloroprene	0.4077	0.3937			-3.4	100.0	A
3-Chloro-1-propene	0.3143	0.3053			-2.9	100.0	A
o-Chlorotoluene	50.0000		45.3056		-9.4	100.0	L
p-Chlorotoluene	50.0000		45.4683		-9.1	100.0	L
Cyclohexane	50.0000		42.1614		-15.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1147			-10.5	100.0	A
1,2-Dibromoethane	0.6135	0.5757			-6.2	100.0	A
Dibromomethane	0.1929	0.1823			-5.5	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		46.0130		-8.0	100.0	L
1,2-Dichlorobenzene	1.6905	1.6367			-3.2	100.0	A
1,3-Dichlorobenzene	1.7148	1.6972			-1.0	100.0	A
1,4-Dichlorobenzene	1.8695	1.7464			-6.6	100.0	A
Dichlorodifluoromethane	0.4406	0.3942			-10.5	100.0	A
1,1-Dichloroethane	0.5657	0.5288		0.100	-6.5	100.0	A
1,2-Dichloroethene, Total	100		95.0313		-5.0	100.0	L
1,2-Dichloroethane	0.4307	0.4084			-5.2	100.0	A
1,1-Dichloroethene	0.3989	0.3471			-13.0	20.0	A
cis-1,2-Dichloroethene	0.4042	0.3838			-5.0	100.0	A
trans-1,2-Dichloroethene	0.3882	0.3692			-4.9	100.0	A
Dichlorofluoromethane	0.5742	0.5098			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.3327	0.3268			-1.8	100.0	A
1,3-Dichloropropane	1.1698	1.0944			-6.4	100.0	A
1,2-Dichloropropane	0.3178	0.3094			-2.7	20.0	A
1,1-Dichloropropene	0.3783	0.3693			-2.4	100.0	A
cis-1,3-Dichloropropene	50.0000		42.4608		-15.1	100.0	L
trans-1,3-Dichloropropene	50.0000		43.2612		-13.5	100.0	L
1,3-Dichloropropene, Total	100		85.7220		-14.3	100.0	L
Diisobutylene	50.0000		43.3954		-13.2	100.0	L
Diisopropyl ether	0.8443	0.8358			-1.0	100.0	A
1,4-Dioxane	0.0033	0.0031			-5.0	100.0	A
Ethyl Acetate	0.2547	0.2280			-10.5	100.0	A
Ethyl ether	0.1901	0.1761			-7.4	100.0	A
Ethyl Methacrylate	50.0000		40.4282		-19.1	100.0	L
Ethyl tert-butyl ether	50.0000		45.8917		-8.2	100.0	L
Ethylbenzene	50.0000		45.9680		-8.1	20.0	L
Freon 113	0.2737	0.2218			-19.0	100.0	A
Heptane	50.0000		39.1465		-21.7	100.0	L
Hexachlorobutadiene	0.4314	0.4062			-5.8	100.0	A
Hexachloroethane	50.0000		41.8275		-16.3	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.4111			-15.0	100.0	A
2-Hexanone	250		218		-12.6	100.0	L
Iodomethane	50.0000		57.9310		15.9	100.0	Q
Isobutyl alcohol	500		400		-20.0	100.0	L
Isopropyl Alcohol	0.0167	0.0146			-12.6	100.0	A
Isopropylbenzene	50.0000		43.8811		-12.2	100.0	L
p-Isopropyltoluene	50.0000		43.7795		-12.4	100.0	L
Methyl acetate	0.0545	0.0477			-12.3	100.0	A
Methyl acrylate	50.0000		43.9177		-12.2	100.0	L
Methacrylonitrile	50.0000		47.1026		-5.8	100.0	L
Methyl cyclohexane	1.0036	0.9405			-6.3	100.0	A
Methyl methacrylate	50.0000		41.0593		-17.9	100.0	L
Methyl t-Butyl Ether	0.7715	0.7083			-8.2	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		227		-9.2	100.0	L
Methylene Chloride	50.0000		50.9335		1.9	100.0	Q
Naphthalene	50.0000		42.0605		-15.9	100.0	Q
Nitrobenzene	500		408		-18.5	100.0	Q
2-Nitropropane	250		207		-17.1	100.0	L
Octane	50.0000		41.0501		-17.9	100.0	L
Pentachloroethane	0.6478	0.6290			-2.9	100.0	A
Pentane	0.1681	0.1132			-32.7	100.0	A
n-Propanol	0.0219	0.0208			-5.0	100.0	A
Propionitrile	0.0412	0.0383			-7.0	100.0	A
n-Propylbenzene	50.0000		45.5300		-8.9	100.0	L
Styrene	50.0000		44.9960		-10.0	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.6924			0.1	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.8507		0.300	-12.6	100.0	A
Tetrachloroethene	0.6720	0.6146			-8.5	100.0	A
Tetrahydrofuran	0.0755	0.0697			-7.7	100.0	A
Toluene	50.0000		45.8229		-8.4	20.0	L
Total Xylenes	150		134		-10.9	100.0	L
1,2,3-Trichlorobenzene	50.0000		45.0380		-9.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		42.8390		-14.3	100.0	Q
1,1,1-Trichloroethane	0.4396	0.4268			-2.9	100.0	A
1,1,2-Trichloroethane	0.5936	0.5342			-10.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3137			-5.3	100.0	A
Trichlorofluoromethane	0.5623	0.5087			-9.5	100.0	A
1,2,3-Trichloropropane	0.3120	0.2663			-14.7	100.0	A
1,2,4-Trimethylbenzene	50.0000		45.2897		-9.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0313		-7.9	100.0	L
Vinyl Acetate	50.0000		45.9016		-8.2	100.0	L
Vinyl Chloride	0.3904	0.3423			-12.3	20.0	A
o-Xylene	50.0000		42.8491		-14.3	100.0	L
mp-Xylene	100		90.8207		-9.2	100.0	L
4-Bromofluorobenzene	50.0000		44.5845		-10.8	100.0	L
Dibromofluoromethane	0.3368	0.2843			-15.6	100.0	A
1,2-Dichloroethane-d4	50.0000		46.4530		-7.1	100.0	L
Toluene-d8	2.5776	2.3032			-10.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-016

Lab File ID: 15042300.D BFB Injection Date: 4/23/2015

Instrument ID: ms15.i BFB Injection Time: 09:51

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.3
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	77.8
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	74.8 (96.1) 1
177	5.0 - 9.0% of mass 176	4.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042302.D	4/23/2015	11:17
2168253(MB)	2168253	15042305.D	4/23/2015	12:33
2168254(LCS)	2168254	15042306.D	4/23/2015	12:51
MRC-MW-16A-041515	2065603006	15042308.D	4/23/2015	13:27
MRC-MW-33A-041515	2065603008	15042309.D	4/23/2015	13:44
MRC-MW-73B-041515	2065603012	15042310.D	4/23/2015	14:02
MRC-MW-114A-041415-DL10	2065603005	15042313.D	4/23/2015	14:53
MRC-MW-72B-041515-DL100	2065603011	15042315.D	4/23/2015	15:27

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0239			-6.1	100.0	A
Acrolein	0.0469	0.0480			2.4	100.0	A
Acrylonitrile	0.1017	0.1029			1.2	100.0	A
Acetonitrile	0.0366	0.0330			-9.9	100.0	A
tert-Amyl Ethylether	50.0000		49.6704		-0.7	100.0	L
tert-Amyl methyl ether	50.0000		48.6696		-2.7	100.0	L
tert-Amyl Alcohol	250		192		-23.2	100.0	L
Benzene	1.2412	1.4017			12.9	100.0	A
Benzyl Chloride	50.0000		53.7271		7.5	100.0	Q
Bromobenzene	0.9020	1.0364			14.9	100.0	A
Bromochloromethane	0.1634	0.1771			8.4	100.0	A
Bromodichloromethane	0.3923	0.4460			13.7	100.0	A
Bromoform	50.0000		46.2155	0.100	-7.6	100.0	Q
Bromomethane	50.0000		66.9949		34.0	100.0	L
2-Butanone	0.0377	0.0315			-16.7	100.0	A
tert.- Butyl Alcohol	0.0248	0.0228			-8.1	100.0	A
tert-Butylbenzene	50.0000		53.4198		6.8	100.0	L
n-Butylbenzene	50.0000		54.1976		8.4	100.0	L
sec-Butylbenzene	50.0000		54.1201		8.2	100.0	L
Carbon Disulfide	0.6640	0.8077			21.6	100.0	A
Carbon Tetrachloride	0.3630	0.4237			16.7	100.0	A
Chloroacetonitrile	250		227		-9.1	100.0	Q
Chlorobenzene	2.1382	2.3641		0.300	10.6	100.0	A
1-Chlorobutane	0.3017	0.3414			13.2	100.0	A
Chlorodibromomethane	50.0000		46.6616		-6.7	100.0	L
Chloroethane	0.2386	0.2777			16.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0769			-40.1	100.0	A
Chloroform	50.0000		55.2796		10.6	20.0	Q
1-Chlorohexane	50.0000		51.9047		3.8	100.0	L
Chloromethane	0.5153	0.5281		0.100	2.5	100.0	A
Chloroprene	0.4077	0.4777			17.2	100.0	A
3-Chloro-1-propene	0.3143	0.4022			28.0	100.0	A
o-Chlorotoluene	50.0000		53.3696		6.7	100.0	L
p-Chlorotoluene	50.0000		53.7630		7.5	100.0	L
Cyclohexane	50.0000		53.8627		7.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1216			-5.2	100.0	A
1,2-Dibromoethane	0.6135	0.6351			3.5	100.0	A
Dibromomethane	0.1929	0.2000			3.7	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		48.1595		-3.7	100.0	L
1,2-Dichlorobenzene	1.6905	1.8718			10.7	100.0	A
1,3-Dichlorobenzene	1.7148	2.0030			16.8	100.0	A
1,4-Dichlorobenzene	1.8695	2.0376			9.0	100.0	A
Dichlorodifluoromethane	0.4406	0.5551			26.0	100.0	A
1,1-Dichloroethane	0.5657	0.6239		0.100	10.3	100.0	A
1,2-Dichloroethene, Total	100		114		13.8	100.0	L
1,2-Dichloroethane	0.4307	0.4435			3.0	100.0	A
1,1-Dichloroethene	0.3989	0.4351			9.1	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4510			11.6	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4502			16.0	100.0	A
Dichlorofluoromethane	0.5742	0.6201			8.0	100.0	A
1,1-Dichloro-2-Propanone	250		214		-14.4	100.0	L
2,2-Dichloropropane	0.3327	0.4180			25.6	100.0	A
1,3-Dichloropropane	1.1698	1.2213			4.4	100.0	A
1,2-Dichloropropane	0.3178	0.3513			10.5	20.0	A
1,1-Dichloropropene	0.3783	0.4353			15.1	100.0	A
cis-1,3-Dichloropropene	50.0000		49.5108		-1.0	100.0	L
trans-1,3-Dichloropropene	50.0000		49.4206		-1.2	100.0	L
1,3-Dichloropropene, Total	100		98.9314		-1.1	100.0	L
Diisobutylene	50.0000		56.5816		13.2	100.0	L
Diisopropyl ether	0.8443	0.9826			16.4	100.0	A
1,4-Dioxane	0.0033	0.0033			-1.3	100.0	A
Ethyl Acetate	0.2547	0.2417			-5.1	100.0	A
Ethyl ether	0.1901	0.1998			5.1	100.0	A
Ethyl Methacrylate	50.0000		44.9097		-10.2	100.0	L
Ethyl tert-butyl ether	50.0000		52.4469		4.9	100.0	L
Ethylbenzene	50.0000		53.5247		7.0	20.0	L
Freon 113	0.2737	0.2931			7.1	100.0	A
Heptane	50.0000		59.9886		20.0	100.0	L
Hexachlorobutadiene	0.4314	0.5619			30.2	100.0	A
Hexachloroethane	50.0000		48.7170		-2.6	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.5697			17.8	100.0	A
2-Hexanone	250		231		-7.4	100.0	L
Iodomethane	50.0000		77.3056		54.6	100.0	Q
Isobutyl alcohol	500		535		7.1	100.0	L
Isopropyl Alcohol	0.0167	0.0153			-8.8	100.0	A
Isopropylbenzene	50.0000		51.8856		3.8	100.0	L
p-Isopropyltoluene	50.0000		53.4014		6.8	100.0	L
Methyl acetate	0.0545	0.0493			-9.4	100.0	A
Methyl acrylate	50.0000		46.8987		-6.2	100.0	L
Methacrylonitrile	50.0000		49.4612		-1.1	100.0	L
Methyl cyclohexane	1.0036	1.2165			21.2	100.0	A
Methyl methacrylate	50.0000		44.9346		-10.1	100.0	L
Methyl t-Butyl Ether	0.7715	0.7911			2.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		242		-3.1	100.0	L
Methylene Chloride	50.0000		59.9564		19.9	100.0	Q
Naphthalene	50.0000		45.7422		-8.5	100.0	Q
Nitrobenzene	500		426		-14.8	100.0	Q
2-Nitropropane	250		222		-11.1	100.0	L
Octane	50.0000		69.6782		39.4	100.0	L
Pentachloroethane	0.6478	0.7077			9.2	100.0	A
Pentane	0.1681	0.1955			16.3	100.0	A
n-Propanol	0.0219	0.0217			-1.1	100.0	A
Propionitrile	0.0412	0.0384			-7.0	100.0	A
n-Propylbenzene	50.0000		53.7839		7.6	100.0	L
Styrene	50.0000		52.3186		4.6	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7776			12.4	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.9022		0.300	-7.3	100.0	A
Tetrachloroethene	0.6720	0.7333			9.1	100.0	A
Tetrahydrofuran	0.0755	0.0715			-5.4	100.0	A
Toluene	50.0000		53.7037		7.4	20.0	L
Total Xylenes	150		157		4.7	100.0	L
1,2,3-Trichlorobenzene	50.0000		50.4410		0.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		51.2571		2.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.5003			13.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5872			-1.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-016

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3685			11.3	100.0	A
Trichlorofluoromethane	0.5623	0.6239			11.0	100.0	A
1,2,3-Trichloropropane	0.3120	0.2846			-8.8	100.0	A
1,2,4-Trimethylbenzene	50.0000		53.0436		6.1	100.0	L
1,3,5-Trimethylbenzene	50.0000		54.0407		8.1	100.0	L
Vinyl Acetate	50.0000		51.8072		3.6	100.0	L
Vinyl Chloride	0.3904	0.4539			16.3	20.0	A
o-Xylene	50.0000		50.8720		1.7	100.0	L
mp-Xylene	100		106		6.3	100.0	L
4-Bromofluorobenzene	50.0000		44.4466		-11.1	100.0	L
Dibromofluoromethane	0.3368	0.2774			-17.6	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8549		-10.3	100.0	L
Toluene-d8	2.5776	2.3218			-9.9	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2167682	82								0
02	2167683LCSLO	82								0
03	MRC-MW-44A-0	81								0
04	MRC-MW-114A-	84								0
05	MRC-MW-15A-0	82								0
06	MRC-MW-16A-0	88								0
07										0
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042301 Time Analyzed: 1047

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	50167	6.35				
	UPPER LIMIT	65217	6.85				
	LOWER LIMIT	35117	5.85				
	SAMPLE NO.						
01	2167682	52174	6.36				
02	2167683LCSLO	52734	6.36				
03	MRC-MW-44A-0	50759	6.36				
04	MRC-MW-114A-	51937	6.36				
05	MRC-MW-15A-0	52025	6.36				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

EPA Sample No. (SSTD050##): HICHECK-8 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042327 Time Analyzed: 2145

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	50566	6.36				
UPPER LIMIT	65736	6.86				
LOWER LIMIT	35396	5.86				
SAMPLE NO.						
01 MRC-MW-16A-0	49220	6.35				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	56413	6.33				
UPPER LIMIT	73337	6.83				
LOWER LIMIT	39489	5.83				
SAMPLE NO.						
01 2ND-0.1	51755	6.36				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Lab File ID: 12042302 Lab Sample ID: 2167682

Instrument ID: MS12 Date Extracted: 04/22/15

Matrix: (soil/water) WATER Date Analyzed: 04/23/15

Level:(low/med) LOW Time Analyzed: 1112

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2167683LCSLO	2167683	12042303	04/23/15
02	MRC-MW-44A-0	2065603002	12042306	04/23/15
03	MRC-MW-114A-	2065603005	12042307	04/23/15
04	MRC-MW-15A-0	2065603007	12042309	04/23/15
05	MRC-MW-16A-0	2065603006	12042328	04/23/15
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2167682

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042302

Level: (low/med) LOW Date Received: 04/22/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix Spike - Sample No.: 2167683LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0631509	90	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	04/23/15	1047	8.36			
02	2167682	2167682	04/23/15	1112	8.36			
03	2167683LCSLO	2167683	04/23/15	1137	8.38			
04	MRC-MW-44A-0	2065603002	04/23/15	1251	8.36			
05	MRC-MW-114A-	2065603005	04/23/15	1316	8.36			
06	MRC-MW-15A-0	2065603007	04/23/15	1405	8.36			
07	HICHECK-8	HICHECK-8	04/23/15	2145	8.36			
08	MRC-MW-16A-0	2065603006	04/23/15	2210	8.36			
09								
10								
11								
12								
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30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 1047

Lab File ID: 12042301 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.39e-003	3.5e-003	1.0178812	0.00001	25.43	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6392250	0.6392250	0.00001	-10.22	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 2145

Lab File ID: 12042327 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF2.0000 or AMOUNT	CCAL RRF2.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	0.4156278	0.5000000	1.5349543	0.00001	-16.87	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6367322	0.6367322	0.00001	-10.57	30.00	AVRG

FORM VII SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column(1):RTX-CLPEST ID:0.32(mm) GC Column(2):RTX-CLPEST2ID:0.32(mm)

	SAMPLE NO.	S1 1 (TCX)#	S1 2 (TCX)#	S2 1 (DCB)#	S2 2 (DCB)#	S3 1 #	S3 2 #	S4 1 #	S4 2 #	TOT OUT
01	2165677	94	95	107	92					0
02	2165678LCS	84	88	115	101					0
03	MRC-MW-43A-0	76	79	102	88					0
04	MRC-MW-44A-0	78	77	52	47					0
05	MRC-MW-103A-	91	87	115	101					0
06	MRC-MW-103B-	86	85	78	70					0
07	MRC-MW-114A-	74	76	109	96					0
08										
09										
10										
11										
12										
13										
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25										
26										
27										
28										
29										
30										

QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (30-133)
S2 (DCB) = Decachlorobiphenyl (30-140) (advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2165677

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Lab File ID: NDKA025 Lab Sample ID: 2165677

Instrument ID: GC23 Matrix: (soil/water) WATER

Level:(low/med) LOW Date Extracted: 04/17/15

Date Analyzed (1): 04/20/15 Date Analyzed (2): 04/20/15

Time Analyzed (1): 1717 Time Analyzed (2): 1717

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	2165678LCS	2165678	NDKA026	04/20/15	04/20/15
02	MRC-MW-43A-0	2065603001	NDKA029	04/20/15	04/20/15
03	MRC-MW-44A-0	2065603002	NDKA030	04/20/15	04/20/15
04	MRC-MW-103A-	2065603003	NDKA031	04/20/15	04/20/15
05	MRC-MW-103B-	2065603004	NDKA032	04/20/15	04/20/15
06	MRC-MW-114A-	2065603005	NDKA033	04/20/15	04/20/15
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2165677

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2165677

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKA025

Level: (low/med) LOW Date Received: 04/17/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2165677

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2165677

Sample wt/vol: 1000 (g/ml) ML Lab File ID: NDKB025

Level: (low/med) LOW Date Received: 04/17/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/17/15

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/20/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor 1016	0.50	U
11104-28-2	Aroclor 1221	0.50	U
11141-16-5	Aroclor 1232	0.50	U
53469-21-9	Aroclor 1242	0.50	U
12672-29-6	Aroclor 1248	0.50	U
11097-69-1	Aroclor 1254	0.50	U
11096-82-5	Aroclor 1260	0.50	U
11100-14-4	Aroclor 1268	0.50	U
37324-23-5	Aroclor 1262	0.50	U

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix Spike - Sample No.: 2165678LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor 1016	5.00000	0.00	4.80938	96	43-132
Aroclor 1260	5.00000	0.00	4.84575	97	49-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____RTX-CLPEST_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix Spike - Sample No.: 2165678LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor 1016	5.00000	0.00	4.45462	89	38-138
Aroclor 1260	5.00000	0.00	3.95536	79	43-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____RTX-CLPEST2_____

FORM III SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: RTX-CLPEST ID: 0.32(mm) Init. Calib. Date(s): 04/07/15 04/07/15

Instrument ID: GC23

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 1.64 DCB: 5.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	1016_1260ICA	1016_1260ICA	04/07/15	1936	1.64	5.36
02	1016_1260ICA	1016_1260ICA	04/07/15	1948	1.64	5.36
03	1016_1260ICA	1016_1260ICA	04/07/15	1959	1.64	5.36
04	1016_1260ICA	1016_1260ICA	04/07/15	2011	1.64	5.36
05	1016_1260ICA	1016_1260ICA	04/07/15	2023	1.64	5.36
06	1016_1260ICA	1016_1260ICA	04/07/15	2035	1.64	5.36
07	1016_1260ICV	1016_1260ICV	04/07/15	2157	1.64	5.36
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QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: RTX-CLPEST2 ID: 0.32(mm) Init. Calib. Date(s): 04/07/15 04/07/15

Instrument ID: GC23

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 1.91 DCB: 6.09

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	1016_1260ICA	1016_1260ICA	04/07/15	1936	1.91	6.09
02	1016_1260ICA	1016_1260ICA	04/07/15	1948	1.91	6.09
03	1016_1260ICA	1016_1260ICA	04/07/15	1959	1.91	6.09
04	1016_1260ICA	1016_1260ICA	04/07/15	2011	1.91	6.09
05	1016_1260ICA	1016_1260ICA	04/07/15	2023	1.91	6.09
06	1016_1260ICA	1016_1260ICA	04/07/15	2035	1.91	6.09
07	1016_1260ICV	1016_1260ICV	04/07/15	2157	1.91	6.09
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QC LIMITS
TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date(s): 04/07/15 04/07/15

Column: RTX-CLPEST ID: 0.32 (mm) Calibration Time(s): 1936 2035

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Aroclor 1016	2ORDR	0.00000000	44620.4063	-1577.3161	0.9995326	0.9900000
(2)	2ORDR	0.00000000	47106.6011	6300.50895	0.9989527	0.9900000
(3)	2ORDR	0.00000000	33200.1999	-81.747571	0.9998128	0.9900000
(4)	2ORDR	0.00000000	26778.1489	-401.51408	0.9999672	0.9900000
(5)	2ORDR	0.00000000	23823.1333	-761.98538	0.9998365	0.9900000
Aroclor 1260	2ORDR	0.00000000	37369.3894	-999.88707	0.9995929	0.9900000
(2)	2ORDR	0.00000000	32329.7356	-1850.9667	0.9995701	0.9900000
(3)	2ORDR	0.00000000	32512.5966	-201.83205	0.9995087	0.9900000
(4)	2ORDR	0.00000000	91536.8143	-2329.6160	0.9997185	0.9900000
(5)	2ORDR	0.00000000	26894.9173	341.198593	0.9997138	0.9900000
Tetrachloro-m-xylene	2ORDR	0.00000000	1384583.46	-431820.67	0.9998973	0.9900000
Decachlorobiphenyl	2ORDR	0.00000000	645015.958	-328418.50	0.9947827	0.9900000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date(s): 04/07/15 04/07/15

Column: RTX-CLPEST2 ID: 0.32 (mm) Calibration Time(s): 1936 2035

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Aroclor 1016	2ORDR	0.00000000	49666.1898	-1458.2306	0.9999206	0.9900000
(2)	2ORDR	0.00000000	79103.5308	298.028161	0.9999871	0.9900000
(3)	2ORDR	0.00000000	47666.0703	-1479.5034	0.9999548	0.9900000
(4)	2ORDR	0.00000000	18691.4933	-470.52911	0.9997786	0.9900000
(5)	2ORDR	0.00000000	23133.6568	-365.04538	0.9992708	0.9900000
Aroclor 1260	2ORDR	0.00000000	46270.9722	-1554.3829	0.9996196	0.9900000
(2)	2ORDR	0.00000000	38188.6271	-1805.9609	0.9997495	0.9900000
(3)	2ORDR	0.00000000	50899.9379	-1189.1900	0.9998456	0.9900000
(4)	2ORDR	0.00000000	97878.0968	-1893.1375	0.9998687	0.9900000
(5)	2ORDR	0.00000000	56499.4759	-700.23790	0.9982319	0.9900000
Tetrachloro-m-xylene	2ORDR	0.00000000	1410888.89	-340509.80	0.9998822	0.9900000
Decachlorobiphenyl	2ORDR	0.00000000	840164.780	-308325.78	0.9980573	0.9900000

FORM VI SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: RTX-CLPEST ID: 0.32(mm) Init. Calib. Date(s): 04/07/15 04/07/15

Instrument ID: GC23

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 1.64 DCB: 5.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	1016_1260CCV	1016_1260CCV	04/20/15	1346	1.64	5.36
02	2165677	2165677	04/20/15	1717	1.64	5.36
03	2165678LCS	2165678	04/20/15	1729	1.64	5.36
04	1016_1260CCV	1016_1260CCV	04/20/15	1752	1.64	5.36
05	MRC-MW-43A-0	2065603001	04/20/15	1804	1.64	5.36
06	MRC-MW-44A-0	2065603002	04/20/15	1815	1.64	5.36
07	MRC-MW-103A-	2065603003	04/20/15	1827	1.64	5.36
08	MRC-MW-103B-	2065603004	04/20/15	1839	1.64	5.36
09	MRC-MW-114A-	2065603005	04/20/15	1851	1.64	5.36
10	1016_1260CCV	1016_1260CCV	04/21/15	1103	1.66	5.39
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QC LIMITS
TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: RTX-CLPEST2 ID: 0.32(mm) Init. Calib. Date(s): 04/07/15 04/07/15

Instrument ID: GC23

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 1.91 DCB: 6.09

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	1016_1260CCV	1016_1260CCV	04/20/15	1346	1.91	6.09
02	2165677	2165677	04/20/15	1717	1.91	6.09
03	2165678LCS	2165678	04/20/15	1729	1.91	6.09
04	1016_1260CCV	1016_1260CCV	04/20/15	1752	1.91	6.09
05	MRC-MW-43A-0	2065603001	04/20/15	1804	1.91	6.09
06	MRC-MW-44A-0	2065603002	04/20/15	1815	1.91	6.09
07	MRC-MW-103A-	2065603003	04/20/15	1827	1.91	6.09
08	MRC-MW-103B-	2065603004	04/20/15	1839	1.91	6.09
09	MRC-MW-114A-	2065603005	04/20/15	1851	1.91	6.09
10	1016_1260CCV	1016_1260CCV	04/21/15	1103	1.92	6.11
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QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.03 MINUTES)
DCB = Decachlorobiphenyl (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/07/15 Time: 2157

Lab File ID: ND7A050 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Aroclor 1016	0.9937532	1.0000000	2.1e-005	0.01	-0.62	20.00	2RDR
(2)	1.0169172	1.0000000	1.47e-005	0.01	1.69	20.00	2RDR
(3)	0.9806451	1.0000000	2.69e-005	0.01	-1.94	20.00	2RDR
(4)	0.9793085	1.0000000	3.55e-005	0.01	-2.07	20.00	2RDR
(5)	0.9581682	1.0000000	3.89e-005	0.01	-4.18	20.00	2RDR
Aroclor 1260	1.0764311	1.0000000	2.45e-005	0.01	7.64	20.00	2RDR
(2)	1.0524076	1.0000000	3.42e-005	0.01	5.24	20.00	2RDR
(3)	1.0764714	1.0000000	2.61e-005	0.01	7.65	20.00	2RDR
(4)	1.0725164	1.0000000	9.97e-006	0.01	7.25	20.00	2RDR
(5)	1.0377991	1.0000000	2.46e-005	0.01	3.78	20.00	2RDR
Tetrachloro-m-xylene	8.03e-002	0.1000000	7.07e-007	0.01	-19.70	20.00	2RDR
Decachlorobiphenyl	8.47e-002	0.1000000	1.38e-006	0.01	-15.30	20.00	2RDR

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/07/15 Time: 2157

Lab File ID: ND7B050 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST2 ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Aroclor 1016	0.9640410	1.0000000	1.87e-005	0.01	-3.60	20.00	2RDR
(2)	0.9440462	1.0000000	1.05e-005	0.01	-5.60	20.00	2RDR
(3)	0.9643973	1.0000000	1.96e-005	0.01	-3.56	20.00	2RDR
(4)	0.9952703	1.0000000	5.01e-005	0.01	-0.47	20.00	2RDR
(5)	1.0072045	1.0000000	3.75e-005	0.01	0.72	20.00	2RDR
Aroclor 1260	1.0572376	1.0000000	1.99e-005	0.01	5.72	20.00	2RDR
(2)	1.0190298	1.0000000	2.8e-005	0.01	1.90	20.00	2RDR
(3)	1.0203156	1.0000000	1.77e-005	0.01	2.03	20.00	2RDR
(4)	1.0655122	1.0000000	8.98e-006	0.01	6.55	20.00	2RDR
(5)	1.0672777	1.0000000	1.4e-005	0.01	6.73	20.00	2RDR
Tetrachloro-m-xylene	8.01e-002	0.1000000	6.81e-007	0.01	-19.90	20.00	2RDR
Decachlorobiphenyl	8.8e-002	0.1000000	1.06e-006	0.01	-12.00	20.00	2RDR

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/20/15 Time: 1346

Lab File ID: NDKA007 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	1.0825174	1.0000000	2.14e-005	0.01	8.25	20.00	2RDR	
(2)	1.1339664	1.0000000	1.56e-005	0.01	13.40	20.00	2RDR	
(3)	1.1228264	1.0000000	2.78e-005	0.01	12.28	20.00	2RDR	
(4)	1.0495224	1.0000000	3.29e-005	0.01	4.95	20.00	2RDR	
(5)	0.8997055	1.0000000	4.77e-005	0.01	-10.03	20.00	2RDR	
Aroclor 1260	1.2323313	1.0000000	2.16e-005	0.01	23.23	20.00	2RDR	<-
(2)	1.0199445	1.0000000	3.39e-005	0.01	1.99	20.00	2RDR	
(3)	1.2688293	1.0000000	2.31e-005	0.01	26.88	20.00	2RDR	<-
(4)	1.1736007	1.0000000	9.65e-006	0.01	17.36	20.00	2RDR	
(5)	1.2939518	1.0000000	2.5e-005	0.01	29.40	20.00	2RDR	<-
Tetrachloro-m-xylene	8.55e-002	0.1000000	8.56e-007	0.01	-14.50	20.00	2RDR	
Decachlorobiphenyl	0.1006658	0.1000000	1.55e-006	0.01	0.66	20.00	2RDR	

average = 19.8, ok

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/20/15 Time: 1346

Lab File ID: NDKB007 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST2 ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	0.9642758	1.0000000	2.15e-005	0.01	-3.57	20.00	2RDR	
(2)	0.9384729	1.0000000	1.34e-005	0.01	-6.15	20.00	2RDR	
(3)	0.9561875	1.0000000	2.26e-005	0.01	-4.38	20.00	2RDR	
(4)	0.8203549	1.0000000	6.66e-005	0.01	-17.96	20.00	2RDR	
(5)	1.0287316	1.0000000	4.27e-005	0.01	2.87	20.00	2RDR	
Aroclor 1260	1.1586699	1.0000000	1.94e-005	0.01	15.87	20.00	2RDR	
(2)	0.9988818	1.0000000	2.75e-005	0.01	-0.11	20.00	2RDR	
(3)	1.1234788	1.0000000	1.8e-005	0.01	12.35	20.00	2RDR	
(4)	1.1921735	1.0000000	8.77e-006	0.01	19.22	20.00	2RDR	
(5)	1.2398783	1.0000000	1.45e-005	0.01	23.99	20.00	2RDR	<-
Tetrachloro-m-xylene	8.11e-002	0.1000000	8.91e-007	0.01	-18.90	20.00	2RDR	
Decachlorobiphenyl	8.94e-002	0.1000000	1.38e-006	0.01	-10.60	20.00	2RDR	

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/20/15 Time: 1752

Lab File ID: NDKA028 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	1.0889988	1.0000000	2.14e-005	0.01	8.90	20.00	2RDR	
(2)	1.1764874	1.0000000	1.56e-005	0.01	17.65	20.00	2RDR	
(3)	1.0856668	1.0000000	2.78e-005	0.01	8.57	20.00	2RDR	
(4)	1.1559620	1.0000000	3.29e-005	0.01	15.60	20.00	2RDR	
(5)	0.9062543	1.0000000	4.77e-005	0.01	-9.37	20.00	2RDR	
Aroclor 1260	1.2801550	1.0000000	2.16e-005	0.01	28.02	20.00	2RDR	<-
(2)	0.9673466	1.0000000	3.39e-005	0.01	-3.26	20.00	2RDR	
(3)	1.3426127	1.0000000	2.31e-005	0.01	34.26	20.00	2RDR	<-
(4)	1.1663870	1.0000000	9.65e-006	0.01	16.64	20.00	2RDR	
(5)	1.4616895	1.0000000	2.5e-005	0.01	46.17	20.00	2RDR	<-
Tetrachloro-m-xylene	8.67e-002	0.1000000	8.56e-007	0.01	-13.30	20.00	2RDR	
Decachlorobiphenyl	0.1058130	0.1000000	1.55e-006	0.01	5.81	20.00	2RDR	

average = 25.67

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/20/15 Time: 1752

Lab File ID: NDKB028 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST2 ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	1.0156878	1.0000000	2.01e-005	0.01	1.57	20.00	2RDR	
(2)	1.0390339	1.0000000	1.03e-005	0.01	3.90	20.00	2RDR	
(3)	1.0199526	1.0000000	2.44e-005	0.01	2.00	20.00	2RDR	
(4)	0.8882233	1.0000000	4.66e-005	0.01	-11.18	20.00	2RDR	
(5)	1.0552368	1.0000000	4.57e-005	0.01	5.52	20.00	2RDR	
Aroclor 1260	1.2551209	1.0000000	2.1e-005	0.01	25.51	20.00	2RDR	<-
(2)	0.9655109	1.0000000	3.68e-005	0.01	-3.45	20.00	2RDR	
(3)	1.1567234	1.0000000	1.83e-005	0.01	15.67	20.00	2RDR	
(4)	1.2239084	1.0000000	9.41e-006	0.01	22.39	20.00	2RDR	<-
(5)	1.3407698	1.0000000	1.37e-005	0.01	34.08	20.00	2RDR	<-
Tetrachloro-m-xylene	9.1e-002	0.1000000	8.7e-007	0.01	-9.00	20.00	2RDR	
Decachlorobiphenyl	9.8e-002	0.1000000	1.55e-006	0.01	-2.00	20.00	2RDR	

average = 20.22

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/21/15 Time: 1103

Lab File ID: NDKA034 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	1.1396738	1.0000000	2.14e-005	0.01	13.97	20.00	2RDR	
(2)	1.7705828	1.0000000	1.56e-005	0.01	77.06	20.00	2RDR	<-
(3)	1.1782910	1.0000000	2.78e-005	0.01	17.83	20.00	2RDR	
(4)	1.0413107	1.0000000	3.29e-005	0.01	4.13	20.00	2RDR	
(5)	0.7365259	1.0000000	4.77e-005	0.01	-26.35	20.00	2RDR	<-
Aroclor 1260	1.4183099	1.0000000	2.16e-005	0.01	41.83	20.00	2RDR	<-
(2)	1.0956470	1.0000000	3.39e-005	0.01	9.56	20.00	2RDR	
(3)	1.5474089	1.0000000	2.31e-005	0.01	54.74	20.00	2RDR	<-
(4)	1.2111205	1.0000000	9.65e-006	0.01	21.11	20.00	2RDR	<-
(5)	1.7258902	1.0000000	2.5e-005	0.01	72.59	20.00	2RDR	<-
Tetrachloro-m-xylene	8.75e-002	0.1000000	8.56e-007	0.01	-12.50	20.00	2RDR	
Decachlorobiphenyl	8.78e-002	0.1000000	1.55e-006	0.01	-12.20	20.00	2RDR	

Aroclor 1016 average > 20
Aroclor 1260 average > 20

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC23 Calibration Date: 04/21/15 Time: 1103

Lab File ID: NDKB034 Init. Calib. Date(s): 04/07/15 04/07/15

Init. Calib. Times: 1936 2035

GC Column: RTX-CLPEST2 ID: 0.32 (mm)

COMPOUND	RRF or AMOUNT	RRF1.0000 or AMOUNT	CCAL RRF1.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Aroclor 1016	1.0304256	1.0000000	2.01e-005	0.01	3.04	20.00	2RDR	
(2)	1.2247989	1.0000000	1.03e-005	0.01	22.48	20.00	2RDR	<-
(3)	0.8834309	1.0000000	2.44e-005	0.01	-11.66	20.00	2RDR	
(4)	1.1827419	1.0000000	4.66e-005	0.01	18.27	20.00	2RDR	
(5)	0.9610750	1.0000000	4.57e-005	0.01	-3.89	20.00	2RDR	
Aroclor 1260	1.0681529	1.0000000	2.1e-005	0.01	6.82	20.00	2RDR	
(2)	0.7374201	1.0000000	3.68e-005	0.01	-26.26	20.00	2RDR	<-
(3)	1.1046602	1.0000000	1.83e-005	0.01	10.47	20.00	2RDR	
(4)	1.1094433	1.0000000	9.41e-006	0.01	10.94	20.00	2RDR	
(5)	1.3130984	1.0000000	1.37e-005	0.01	31.31	20.00	2RDR	<-
Tetrachloro-m-xylene	8.31e-002	0.1000000	8.7e-007	0.01	-16.90	20.00	2RDR	
Decachlorobiphenyl	7.91e-002	0.1000000	1.55e-006	0.01	-20.90	20.00	2RDR	<-

Aroclor 1260 average = 17.16

FORM VII SV

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2167215

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Lab File ID: MDLA004 Lab Sample ID: 2167215

Date Analyzed: 04/21/15 Time Analyzed: 1804

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-72B-0	2065603011	MDLA007	1856
02	MRC-MW-72B-0	2167216	MDLA008	1918
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
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23				
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27				
28				
29				
30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2167215

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2167215

Sample wt/vol: _____ (g/mL) ML Lab File ID: MDLA004

Level: (low/med) LOW Date Received: 04/21/15

% Moisture: not dec. _____ Date Analyzed: 04/21/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
MRC-MW-72
B-041515 DUP

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Matrix: (soil/water) WATER Lab Sample ID: 2167216

Sample wt/vol: _____ (g/mL) ML Lab File ID: MDLA008

Level: (low/med) LOW Date Received: 04/15/15

% Moisture: not dec. _____ Date Analyzed: 04/21/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
10						
11						
12						
13						
14						
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16						
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32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	04/21/15	1637		
02	LEVEL5	LEVEL5	04/21/15	1730		
03	2167215	2167215	04/21/15	1804		
04	MRC-MW-72B-0	2065603011	04/21/15	1856		
05	MRC-MW-72B-0	2167216	04/21/15	1918		
06	LEVEL3	LEVEL3	04/21/15	2228		
07						
08						
09						
10						
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32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC03 Calibration Date: 04/21/15 Time: 1637

Lab File ID: MDLA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	21.874373	0.01	-13.86	15.00	AVRG	
ETHENE	47.550000	42.328539	0.01	-10.98	15.00	AVRG	
ETHANE	48.365000	42.233566	0.01	-12.68	15.00	AVRG	
PROPANE	67.640000	61.195127	0.01	-9.53	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-NT
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-NT

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC03 Calibration Date: 04/21/15 Time: 2228

Lab File ID: MDLA017 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	22.767409	0.01	-10.35	15.00	AVRG	
ETHENE	47.550000	45.705649	0.01	-3.88	15.00	AVRG	
ETHANE	48.365000	46.348578	0.01	-4.17	15.00	AVRG	
PROPANE	67.640000	66.362109	0.01	-1.89	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-NT
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-NT

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM016

Instrument ID: GC03 Calibration Date: 04/21/15 Time: 1730

Lab File ID: MDLA003 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	21.611481	0.01	-14.90	15.00	AVRG
ETHENE	47.550000	40.510742	0.01	-14.80	15.00	AVRG
ETHANE	48.365000	42.203960	0.01	-12.74	15.00	AVRG
PROPANE	67.640000	62.404738	0.01	-7.74	15.00	AVRG
N-BUTANE	88.662000	83.474000	0.01	-5.85	15.00	AVRG
ISO-BUTANE	85.930000	82.154000	0.01	-4.39	15.00	AVRG

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-016 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM016|MRC-GW 2015 S **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2065603006	MRC-MW-16A-041515	
2065603007	MRC-MW-15A-041515	
2065603008	MRC-MW-33A-041515	
2065603009	MRC-MW-31A-041515	
2065603009S	MRC-MW-31A-041515S	Matrix Spike
2065603009SD	MRC-MW-31A-041515SD	Matrix Spike Duplicate
2065603010	MRC-MW-30A-041515	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2350																										
BLK	1.00	2353			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2357			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0001			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0004			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0008			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0011			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0015			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0018																										
ICB2	1.00	0022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0026			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0029			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0033			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0047																										
ZZZZZZ	1.00	0052																										
2166233	1.00	0056			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2166234	1.00	0059			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0103																										
ZZZZZZ	1.00	0106																										
ZZZZZZ	1.00	0110																										
ZZZZZZ	1.00	0113																										
ZZZZZZ	1.00	0117																										
ZZZZZZ	1.00	0121																										
ZZZZZZ	1.00	0124																										
ZZZZZZ	1.00	0128																										
CCV1	1.00	0132			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0135			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0139			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
2065603006	1.00	0150			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065603007	1.00	0153			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065603008	1.00	0157			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065603009	1.00	0201			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065603009S	1.00	0204			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065603009SD	1.00	0208			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
2065603010	1.00	0211			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0215																										
CCV2	1.00	0219			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0222			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0226			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0230																										
ZZZZZZ	1.00	0233																										
ZZZZZZ	1.00	0237																										
ZZZZZZ	1.00	0240																										
ZZZZZZ	1.00	0244																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0251																										
ZZZZZZ	1.00	0255																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0302																										
ZZZZZZ	1.00	0306																										
ZZZZZZ	1.00	0309																										
ZZZZZZ	1.00	0313																										
ZZZZZZ	1.00	0317																										
ZZZZZZ	1.00	0320																										
ZZZZZZ	1.00	0324																										
ZZZZZZ	1.00	0327																										
ZZZZZZ	1.00	0331																										
ZZZZZZ	1.00	0335																										
ZZZZZZ	1.00	0338																										
ZZZZZZ	1.00	0342																										
ZZZZZZ	1.00	0346																										
ZZZZZZ	1.00	0349																										
ZZZZZZ	1.00	0353																										
ZZZZZZ	1.00	0356																										
ZZZZZZ	1.00	0400																										
ZZZZZZ	1.00	0404																										
ZZZZZZ	1.00	0407																										
ZZZZZZ	1.00	0411																										
ZZZZZZ	1.00	0415																										
ZZZZZZ	1.00	0418																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	10.00	0424																								
ZZZZZZ	10.00	0427																								
ZZZZZZ	1.00	0431																								
ZZZZZZ	1.00	0434																								
ZZZZZZ	1.00	0438																								

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1012	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Arsenic	0.0991	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Barium	0.0983	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Beryllium	0.0987	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cadmium	0.0985	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Chromium	0.1005	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cobalt	0.1001	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Copper	0.1002	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Lead	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Manganese	0.0998	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Molybdenum	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Nickel	0.0952	0.1000	95		90 - 110	M	4/21/2015	00:15	B042115A 2
	Selenium	0.0974	0.1000	97		90 - 110	M	4/21/2015	00:15	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Thallium	0.0977	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Vanadium	0.1016	0.1000	102		90 - 110	M	4/21/2015	00:15	B042115A 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	00:26	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	00:26	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/21/2015	00:26	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Copper	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	00:26	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	00:26	B042115A 2
	Selenium	0.0048	0.0050	96		70 - 130	M	4/21/2015	00:26	B042115A 2
	Silver	0.0021	0.0020	105		70 - 130	M	4/21/2015	00:26	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1007	0.1000	101		90 - 110	M	4/21/2015	01:32	B042115A 2
	Arsenic	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Barium	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Beryllium	0.0925	0.1000	92		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cadmium	0.0977	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Chromium	0.1000	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cobalt	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Copper	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Lead	0.1004	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Manganese	0.0991	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Molybdenum	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Nickel	0.0947	0.1000	95		90 - 110	M	4/21/2015	01:32	B042115A 2
	Selenium	0.0944	0.1000	94		90 - 110	M	4/21/2015	01:32	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Thallium	0.0971	0.1000	97		90 - 110	M	4/21/2015	01:32	B042115A 2
	Vanadium	0.1002	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Copper	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	01:39	B042115A 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Selenium	0.0047	0.0050	94		70 - 130	M	4/21/2015	01:39	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1018	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Arsenic	0.0994	0.1000	99		90 - 110	M	4/21/2015	02:19	B042115A 2
	Barium	0.0984	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Beryllium	0.0965	0.1000	96		90 - 110	M	4/21/2015	02:19	B042115A 2
	Cadmium	0.0989	0.1000	99		90 - 110	M	4/21/2015	02:19	B042115A 2
	Chromium	0.1007	0.1000	101		90 - 110	M	4/21/2015	02:19	B042115A 2
	Cobalt	0.0996	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Copper	0.1001	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Lead	0.1015	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Manganese	0.1012	0.1000	101		90 - 110	M	4/21/2015	02:19	B042115A 2
	Molybdenum	0.1018	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Nickel	0.0953	0.1000	95		90 - 110	M	4/21/2015	02:19	B042115A 2
	Selenium	0.0979	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Silver	0.0998	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Thallium	0.0979	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Vanadium	0.1015	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	02:26	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	02:26	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	02:26	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Cobalt	0.0049	0.0050	98		70 - 130	M	4/21/2015	02:26	B042115A 2
	Copper	0.0048	0.0050	96		70 - 130	M	4/21/2015	02:26	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Manganese	0.0050	0.0050	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/21/2015	02:26	B042115A 2
	Nickel	0.0048	0.0050	96		70 - 130	M	4/21/2015	02:26	B042115A 2
	Selenium	0.0046	0.0050	92		70 - 130	M	4/21/2015	02:26	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/21/2015	02:26	B042115A 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	00:22	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	00:22	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	00:22	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	00:22	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	00:22	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	01:35	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	01:35	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	01:35	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	01:35	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	01:35	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Arsenic	0.0003				-0.00300 - -0.00300	4/21/2015	00:29	B042115A 23
	Barium	0.0004				-0.01000 - -0.01000	4/21/2015	00:29	B042115A 23
	Beryllium	0.00001				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Cadmium	0.0010				-0.00100 - -0.00100	4/21/2015	00:29	B042115A 23
	Chromium	0.0006				-0.00400 - -0.00400	4/21/2015	00:29	B042115A 23
	Cobalt	0.0006				-0.00600 - -0.00600	4/21/2015	00:29	B042115A 23
	Copper	0.0011				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Lead	0.0001				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Manganese	0.0013				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Molybdenum	1.9387	2.00000	97		80 - 120%	4/21/2015	00:29	B042115A 23
	Nickel	0.0008				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Selenium	0.0000				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Silver	0.0004				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Thallium	0.00002				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Vanadium	0.0002				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Arsenic	0.0204	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Barium	0.0003				-0.00500 - -0.00500	4/21/2015	00:33	B042115A 23
	Beryllium	0.00002				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Cadmium	0.0104	0.01000	104		80 - 120%	4/21/2015	00:33	B042115A 23
	Chromium	0.0196	0.02000	98		80 - 120%	4/21/2015	00:33	B042115A 23
	Cobalt	0.0382	0.04000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Copper	0.0192	0.02000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Lead	0.0002				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Manganese	0.0203	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Molybdenum	2.0480	2.00000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Nickel	0.0353	0.04000	88		80 - 120%	4/21/2015	00:33	B042115A 23
	Selenium	0.0186	0.02000	93		80 - 120%	4/21/2015	00:33	B042115A 23
	Silver	0.0198	0.02000	99		80 - 120%	4/21/2015	00:33	B042115A 23
	Thallium	0.00001				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Vanadium	0.0422	0.04000	106		80 - 120%	4/21/2015	00:33	B042115A 23

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	02:22	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	02:22	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	02:22	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	02:22	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	02:22	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 **Lab Code:** CAS **Method:** MS
Sampling

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68264						
2166233	MB for HBN 68264 [MDIG/50420	MB	QC-WAT	4/20/15	45.0	50.0	
2166234	LCS for HBN 68264 [MDIG/50420	LCS	QC-WAT	4/20/15	45.0	50.0	
2065603006	MRC-MW-16A-041515	SAM	GROUN	4/20/15	45.0	50.0	
2065603007	MRC-MW-15A-041515	SAM	GROUN	4/20/15	45.0	50.0	
2065603008	MRC-MW-33A-041515	SAM	GROUN	4/20/15	45.0	50.0	
2065603009	MRC-MW-31A-041515	SAM	GROUN	4/20/15	45.0	50.0	
2065603009S	MRC-MW-31A-041515S	MS	GROUN	4/20/15	45.0	50.0	
2065603009SD	MRC-MW-31A-041515SD	MSD	GROUN	4/20/15	45.0	50.0	
2065603010	MRC-MW-30A-041515	SAM	GROUN	4/20/15	45.0	50.0	

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166233			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	00:56	B042115A 2350
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/21/2015	00:56	B042115A 2350
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/21/2015	00:56	B042115A 2350
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/21/2015	00:56	B042115A 2350
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	00:56	B042115A 2350
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	00:56	B042115A 2350
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Molybdenum	0.00142	J		0.00556	0.00074	0.00556	M	4/21/2015	00:56	B042115A 2350
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	00:56	B042115A 2350
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	00:56	B042115A 2350
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/21/2015	00:56	B042115A 2350
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	00:56	B042115A 2350

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166234									
	Antimony	mg/L	0.2220	0.2232		101		80 - 120	M
	Arsenic	mg/L	0.2220	0.2135		96		80 - 120	M
	Barium	mg/L	2.2220	2.2619		102		80 - 120	M
	Beryllium	mg/L	0.2220	0.2205		99		80 - 120	M
	Cadmium	mg/L	0.2220	0.2243		101		80 - 120	M
	Chromium	mg/L	0.2220	0.2251		101		80 - 120	M
	Cobalt	mg/L	0.2220	0.2221		100		80 - 120	M
	Copper	mg/L	0.2220	0.2179		98		80 - 120	M
	Lead	mg/L	0.2220	0.2319		104		80 - 120	M
	Manganese	mg/L	0.2220	0.2293		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2299		104		80 - 120	M
	Nickel	mg/L	0.2220	0.2228		100		80 - 120	M
	Selenium	mg/L	0.2220	0.2009		90		80 - 120	M
	Silver	mg/L	0.1110	0.1183		107		80 - 120	M
	Thallium	mg/L	0.2220	0.2269		102		80 - 120	M
	Vanadium	mg/L	0.2220	0.2260		102		80 - 120	M

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065603009 **Client ID:** MRC-MW-31A-041515S **LIMS ID:** 2166235

Percent Solids for Sample: 0.00 **Spiked ID:** 2065603009S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.211		0.003	U	0.222	95		M
Barium	mg/L	75 - 125	2.263		0.095		2.222	98		M
Beryllium	mg/L	75 - 125	0.22212		0.00543		0.22222	98		M
Cadmium	mg/L	75 - 125	0.219		0.000		0.222	99		M
Chromium	mg/L	75 - 125	0.217		0.001		0.222	97		M
Cobalt	mg/L	75 - 125	0.261		0.049		0.222	95		M
Copper	mg/L	75 - 125	0.234		0.023		0.222	95		M
Lead	mg/L	75 - 125	0.228		0.002	U	0.222	103		M
Manganese	mg/L	75 - 125	0.242		0.020		0.222	100		M
Molybdenum	mg/L	75 - 125	0.225		0.006	U	0.222	101		M
Nickel	mg/L	75 - 125	0.301		0.088		0.222	96		M
Selenium	mg/L	75 - 125	0.202		0.006	U	0.222	91		M
Silver	mg/L	75 - 125	0.114		0.002	U	0.111	103		M
Thallium	mg/L	75 - 125	0.2212		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.221		0.002	U	0.222	100		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065603009 **Client ID:** MRC-MW-31A-041515SD **LIMS ID:** 2166236

Percent Solids for Sample: 0.00 **Spiked ID:** 2065603009SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.216		0.003	U	0.222	97		M
Barium	mg/L	75 - 125	2.317		0.095		2.222	100		M
Beryllium	mg/L	75 - 125	0.22569		0.00540		0.22222	99		M
Cadmium	mg/L	75 - 125	0.221		0.000		0.222	100		M
Chromium	mg/L	75 - 125	0.220		0.001		0.222	99		M
Cobalt	mg/L	75 - 125	0.262		0.049		0.222	96		M
Copper	mg/L	75 - 125	0.236		0.023		0.222	96		M
Lead	mg/L	75 - 125	0.230		0.002	U	0.222	104		M
Manganese	mg/L	75 - 125	0.241		0.020		0.222	100		M
Molybdenum	mg/L	75 - 125	0.230		0.006	U	0.222	104		M
Nickel	mg/L	75 - 125	0.302		0.088		0.222	96		M
Selenium	mg/L	75 - 125	0.205		0.006	U	0.222	92		M
Silver	mg/L	75 - 125	0.114		0.002	U	0.111	103		M
Thallium	mg/L	75 - 125	0.2212		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.222		0.002	U	0.222	100		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065603009S **Client ID:** MRC-MW-31A-041515SD **LIMS ID:** 2166236

Percent Solids for Sample: 0.00 **Duplicate ID:** 2065603009SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.22		0		M
Arsenic	mg/L	0 - 20	0.211		0.216		2		M
Barium	mg/L	0 - 20	2.263		2.317		2		M
Beryllium	mg/L	0 - 20	0.22212		0.22569		2		M
Cadmium	mg/L	0 - 20	0.219		0.221		1		M
Chromium	mg/L	0 - 20	0.217		0.220		1		M
Cobalt	mg/L	0 - 20	0.261		0.262		0		M
Copper	mg/L	0 - 20	0.234		0.236		1		M
Lead	mg/L	0 - 20	0.228		0.230		1		M
Manganese	mg/L	0 - 20	0.242		0.241		0		M
Molybdenum	mg/L	0 - 20	0.225		0.230		2		M
Nickel	mg/L	0 - 20	0.301		0.302		0		M
Selenium	mg/L	0 - 20	0.202		0.205		1		M
Silver	mg/L	0 - 20	0.114		0.114		0		M
Thallium	mg/L	0 - 20	0.2212		0.2212		0		M
Vanadium	mg/L	0 - 20	0.221		0.222		0		M

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INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-016 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM016|MRC-GW 2015 S **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2065603006	MRC-MW-16A-041515	
2065603007	MRC-MW-15A-041515	
2065603008	MRC-MW-33A-041515	
2065603009	MRC-MW-31A-041515	
2065603010	MRC-MW-30A-041515	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042015B 3015

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0859												X													
ICAL2	1.00	0902												X													
ICAL3	1.00	0905												X													
ICAL4	1.00	0908												X													
ICAL5	1.00	0911												X													
ICV1	1.00	0914												X													
ICB1	1.00	0917												X													
ZZZZZZ	1.00	0920																									
CRDL2	1.00	0924												X													
CCV1	1.00	0927												X													
HIGH	1.00	0930												X													
ICS-A1	1.00	0933												X													
ICS-AB1	1.00	0936												X													
ZZZZZZ	1.00	0951																									
ZZZZZZ	1.00	0954																									
ZZZZZZ	1.00	0957																									
2166055	1.00	1000												X													
2166056	1.00	1004												X													
ZZZZZZ	5.00	1007																									
ZZZZZZ	5.00	1010																									
ZZZZZZ	5.00	1013																									
ZZZZZZ	5.00	1016																									
ZZZZZZ	5.00	1019																									
CCV2	1.00	1023												X													
CCB1	1.00	1025												X													
ZZZZZZ	1.00	1029																									
ZZZZZZ	1.00	1032																									
ZZZZZZ	1.00	1035																									
ZZZZZZ	5.00	1038																									
ZZZZZZ	5.00	1041																									
ZZZZZZ	5.00	1044																									
ZZZZZZ	5.00	1047																									
ZZZZZZ	5.00	1050																									
ZZZZZZ	5.00	1053																									
ZZZZZZ	1.00	1057																									
CCV3	1.00	1100												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042015B 3015

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
CCB2	1.00	1103												X																
ZZZZZZ	1.00	1106																												
ZZZZZZ	1.00	1109																												
ZZZZZZ	10.00	1112																												
ZZZZZZ	5.00	1115																												
2065603006	1.00	1118												X																
2065603007	1.00	1121												X																
2065603008	1.00	1125												X																
2065603009	1.00	1128												X																
2065603010	1.00	1131												X																
ZZZZZZ	1.00	1134																												
CCV4	1.00	1137												X																
CCB3	1.00	1140												X																
ZZZZZZ	1.00	1143																												
LLCCV	1.00	1147												X																
ICS-A2	1.00	1151												X																
ICS-AB2	1.00	1154												X																
ZZZZZZ	1.00	1201																												
ZZZZZZ	1.00	1204																												
ZZZZZZ	1.00	1207																												
ZZZZZZ	1.00	1210																												
ZZZZZZ	1.00	1213																												
ZZZZZZ	1.00	1216																												
ZZZZZZ	1.00	1219																												
ZZZZZZ	1.00	1222																												
ZZZZZZ	1.00	1225																												
ZZZZZZ	1.00	1228																												
ZZZZZZ	1.00	1231																												
ZZZZZZ	1.00	1234																												
ZZZZZZ	1.00	1238																												
ZZZZZZ	1.00	1241																												
ZZZZZZ	100.00	1244																												
ZZZZZZ	100.00	1247																												
ZZZZZZ	100.00	1251																												
ZZZZZZ	20.00	1254																												
ZZZZZZ	10.00	1258																												

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042015B 3015

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1301																								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1307																								
ZZZZZZ	1.00	1310																								
ZZZZZZ	1.00	1313																								
ZZZZZZ	1.00	1316																								
ZZZZZZ	1.00	1320																								
ZZZZZZ	1.00	1323																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	1.00	1329																								
ZZZZZZ	1.00	1332																								
ZZZZZZ	1.00	1335																								
ZZZZZZ	1.00	1338																								
ZZZZZZ	1.00	1341																								
ZZZZZZ	1.00	1344																								
ZZZZZZ	1.00	1347																								
ZZZZZZ	1.00	1350																								
ZZZZZZ	1.00	1354																								
ZZZZZZ	1.00	1357																								
ZZZZZZ	1.00	1400																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1406																								
ZZZZZZ	1.00	1409																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1421																								
ZZZZZZ	1.00	1425																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1431																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1443																								
ZZZZZZ	1.00	1446																								
ZZZZZZ	1.00	1449																								

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042015B 3015

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1455																									
ZZZZZZ	1.00	1543																									

6010C 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.005	1.000	100		90 - 110	P	4/20/2015	09:14	042015B 30
CCV	Iron	2.472	2.500	99		90 - 110	P	4/20/2015	09:27	042015B 30
CCV	Iron	2.447	2.500	98		90 - 110	P	4/20/2015	10:23	042015B 30
CCV	Iron	2.391	2.500	96		90 - 110	P	4/20/2015	11:00	042015B 30
CCV	Iron	2.344	2.500	94		90 - 110	P	4/20/2015	11:37	042015B 30
LLCCV	Iron	0.069	0.060	115		70 - 130	P	4/20/2015	11:47	042015B 30

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- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.061	0.060	102		70 - 130	P	4/20/2015	09:24	042015B 3

6010C 3015

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/20/2015	09:17	042015B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/20/2015	10:25	042015B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/20/2015	11:03	042015B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/20/2015	11:40	042015B 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	111.8	125.0	89		80 - 120%	4/20/2015	09:33	042015B 3015
ICSAB									
	Iron	115.8	125.0	93		80 - 120%	4/20/2015	09:36	042015B 3015
ICSA									
	Iron	125.2	125.0	100		80 - 120%	4/20/2015	11:51	042015B 3015
ICSAB									
	Iron	127.0	125.0	102		80 - 120%	4/20/2015	11:54	042015B 3015

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-016
Contract: TMM016|MRC-GW 2015 **Lab Code:** CAS
Sampling
Method: P
Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68231						
2166055	MB for HBN 68231 [MDIG/50409	MB	QC-WAT	4/19/15	45.0	50.0	
2166056	LCS for HBN 68231 [MDIG/50409	LCS	QC-WAT	4/19/15	45.0	50.0	
2065603006	MRC-MW-16A-041515	SAM	GROUN	4/19/15	45.0	50.0	
2065603007	MRC-MW-15A-041515	SAM	GROUN	4/19/15	45.0	50.0	
2065603008	MRC-MW-33A-041515	SAM	GROUN	4/19/15	45.0	50.0	
2065603009	MRC-MW-31A-041515	SAM	GROUN	4/19/15	45.0	50.0	
2065603010	MRC-MW-30A-041515	SAM	GROUN	4/19/15	45.0	50.0	

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166055			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/20/2015	10:00	042015B 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166056									
	Iron	mg/L	1.11	1.099		99		80 - 120	P

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-016 Method Type: 7470A SOW No.:

Contract: TMM016|MRC-GW 2015 S Lab Code: CAS Case No.: SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2065603006	MRC-MW-16A-041515	
2065603007	MRC-MW-15A-041515	
2065603008	MRC-MW-33A-041515	
2065603009	MRC-MW-31A-041515	
2065603010	MRC-MW-30A-041515	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042015W

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1359																X									
Standard #1 (0.2ppb	1.00	1400																X									
	1.00	1401																X									
	1.00	1402																X									
	1.00	1403																X									
	1.00	1404																X									
ICV1	1.00	1405																X									
ICB1	1.00	1406																X									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1430																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1434																									
ZZZZZZ	1.00	1435																									
ZZZZZZ	1.00	1436																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042015W

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1438																										
ZZZZZZ	1.00	1439																										
ZZZZZZ	1.00	1440																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1442																										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1445																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1448																										
ZZZZZZ	1.00	1449																										
ZZZZZZ	1.00	1450																										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1454																										
ZZZZZZ	1.00	1455																										
CCV4	1.00	1456																X										
CCB4	1.00	1457																X										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1504																										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1506																										
2166488	1.00	1507																X										
2166489	1.00	1508																X										
CCV5	1.00	1509																X										
CCB5	1.00	1511																X										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1514																										
ZZZZZZ	1.00	1515																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042015W

Start Date: 4/20/2015 End Date: 4/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1516																										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1519																										
ZZZZZZ	1.00	1520																										
ZZZZZZ	1.00	1522																										
CCV6	1.00	1523																X										
CCB6	1.00	1524																X										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										
ZZZZZZ	1.00	1527																										
ZZZZZZ	1.00	1528																										
ZZZZZZ	1.00	1529																										
ZZZZZZ	1.00	1530																										
ZZZZZZ	1.00	1531																										
2065603006	1.00	1532																X										
2065603007	1.00	1533																X										
ZZZZZZ	1.00	1534																										
CCV7	1.00	1535																X										
CCB7	1.00	1536																X										
ZZZZZZ	1.00	1537																										
ZZZZZZ	1.00	1538																										
ZZZZZZ	1.00	1548																										
ZZZZZZ	1.00	1551																										
ZZZZZZ	1.00	1552																										
ZZZZZZ	1.00	1553																										
ZZZZZZ	1.00	1554																										
ZZZZZZ	1.00	1556																										
ZZZZZZ	1.00	1557																										
ZZZZZZ	1.00	1558																										
ZZZZZZ	1.00	1559																										
ZZZZZZ	1.00	1600																										

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1336																X									
Standard #1 (0.2ppb	1.00	1337																X									
	1.00	1338																X									
	1.00	1339																X									
	1.00	1340																X									
	1.00	1341																X									
ICV1	1.00	1342																X									
ICB1	1.00	1343																X									
2166607	1.00	1344																X									
2166608	1.00	1345																X									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1354																									
CCV1	1.00	1355																X									
CCB1	1.00	1356																X									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
2065603008	1.00	1359																X									
2065603009	1.00	1400																X									
2065603010	1.00	1401																X									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
CCV2	1.00	1407																X									
CCB2	1.00	1409																X									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes
				AL SB AS BA BE CD CA CR CO CU FE PB MG MN HG NI K SE AG NA TL V ZN CN
ZZZZZZ	1.00	1414		
ZZZZZZ	1.00	1415		
ZZZZZZ	1.00	1416		
ZZZZZZ	1.00	1417		
ZZZZZZ	1.00	1418		
ZZZZZZ	1.00	1419		
ZZZZZZ	1.00	1420		
ZZZZZZ	1.00	1421		
ZZZZZZ	1.00	1422		
ZZZZZZ	1.00	1424		
ZZZZZZ	1.00	1425		
ZZZZZZ	1.00	1426		
ZZZZZZ	1.00	1427		
ZZZZZZ	1.00	1428		
ZZZZZZ	1.00	1429		
ZZZZZZ	1.00	1430		
ZZZZZZ	1.00	1431		
ZZZZZZ	1.00	1432		
ZZZZZZ	1.00	1433		
ZZZZZZ	1.00	1434		
ZZZZZZ	1.00	1436		
ZZZZZZ	1.00	1437		
ZZZZZZ	1.00	1438		
ZZZZZZ	1.00	1439		
ZZZZZZ	1.00	1440		
ZZZZZZ	1.00	1441		
ZZZZZZ	1.00	1442		
ZZZZZZ	1.00	1443		
ZZZZZZ	1.00	1444		
ZZZZZZ	1.00	1445		
ZZZZZZ	1.00	1446		
ZZZZZZ	1.00	1448		
ZZZZZZ	1.00	1449		
ZZZZZZ	1.00	1450		
ZZZZZZ	1.00	1451		
ZZZZZZ	1.00	1452		

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1454																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1504																										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1507																										
ZZZZZZ	1.00	1508																										
ZZZZZZ	1.00	1509																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1514																										
ZZZZZZ	1.00	1516																										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1519																										
ZZZZZZ	1.00	1520																										
ZZZZZZ	1.00	1521																										
ZZZZZZ	1.00	1522																										
ZZZZZZ	1.00	1523																										
ZZZZZZ	1.00	1524																										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										
ZZZZZZ	1.00	1527																										
ZZZZZZ	1.00	1528																										
ZZZZZZ	1.00	1529																										
ZZZZZZ	1.00	1530																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM016|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-016

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1532																										
ZZZZZZ	1.00	1533																										
ZZZZZZ	1.00	1534																										
ZZZZZZ	1.00	1535																										
ZZZZZZ	1.00	1536																										
ZZZZZZ	1.00	1537																										
ZZZZZZ	1.00	1538																										
ZZZZZZ	1.00	1539																										
ZZZZZZ	1.00	1540																										
ZZZZZZ	1.00	1541																										
ZZZZZZ	1.00	1542																										
ZZZZZZ	1.00	1543																										
ZZZZZZ	1.00	1545																										
ZZZZZZ	1.00	1546																										
ZZZZZZ	1.00	1557																										
ZZZZZZ	1.00	1558																										

7470A
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	4/20/2015	14:05	042015W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/20/2015	14:56	042015W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/20/2015	15:09	042015W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/20/2015	15:23	042015W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/20/2015	15:35	042015W
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	4/21/2015	13:42	042115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/21/2015	13:55	042115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/21/2015	14:07	042115W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/20/2015	14:06	042015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/20/2015	14:57	042015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/20/2015	15:11	042015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/20/2015	15:24	042015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/20/2015	15:36	042015W
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	13:43	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	13:56	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	14:09	042115W

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 **Lab Code:** CAS **Method:** CV
Sampling

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68323						
2166488	MB for HBN 68323 [MDIG/50434	MB	QC-WAT	4/20/15	25.0	25.0	
2166489	LCS for HBN 68323 [MDIG/50434	LCS	QC-WAT	4/20/15	25.0	25.0	
2065603006	MRC-MW-16A-041515	SAM	GROUN	4/20/15	25.0	25.0	
2065603007	MRC-MW-15A-041515	SAM	GROUN	4/20/15	25.0	25.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-016

Contract: TMM016|MRC-GW 2015 **Lab Code:** CAS
Sampling

Method: CV

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68398						
2166607	MB for HBN 68398 [MDIG/50438	MB	QC-WAT	4/21/15	25.0	25.0	
2166608	LCS for HBN 68398 [MDIG/50438	LCS	QC-WAT	4/21/15	25.0	25.0	
2065603008	MRC-MW-33A-041515	SAM	GROUN	4/21/15	25.0	25.0	
2065603009	MRC-MW-31A-041515	SAM	GROUN	4/21/15	25.0	25.0	
2065603010	MRC-MW-30A-041515	SAM	GROUN	4/21/15	25.0	25.0	

7470A
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166488			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/20/2015	15:07	042015W
2166607			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/21/2015	13:44	042115W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166489									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-016

Contract: TMM016|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166608									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

W 1511257

14348/#1

Analytical Laboratory Services, Inc.

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 1511257 | 1 of 1

ALSI Quote #:

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT [ ] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [x] -Y ALMDT.Subcontract@alsglobal.com

Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	Perchlorate (Method 6850)
					ANALYSES/METHOD REQUESTED			
					Enter Number of Containers Per Sample or Field Results Below.			
2065603 011	4/15/15	1245	C	GW				X

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?	[ ]	[ ]
(if present) Seals Intact?	[ ]	[ ]
Received on Ice?	[ ]	[ ]
COC/Labels Agree?	[ ]	[ ]
Cont. in Good Cond.?	[ ]	[ ]
Correct Containers?	[ ]	[ ]
Correct Sample Volumes?	[ ]	[ ]
Correct Preservation?	[ ]	[ ]

Information concerning all nonconformance samples/conlainers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

Subcontract: ALS Salt Lake City

Level IV Package Needed

TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time)

Reviewed By (initials/date/time)

	Relinquished By / Company Name	Date	Time		Received By / Company Name	Date	Time
1		4/21/15	1630	2		04/22/15	0815
3				4			
5				6			
7				8			
9				10			

Data Deliverables: [ ] Standard [x] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ] DOD [ ]

State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]

Reportable to PADEP? Yes [ ]

PWSID #

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type- ADR/SEDD

*G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) 151857

Client Name: ALS Middletown

Project/Task/Site: PO 2065603

Date/Time of Receipt: 04/22/15 09:57

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 6017	3 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: _____ (Signature) Thomas Carlson (Printed Name) 04/22/2015 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.dot

Revised 1/1/15

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511256; 1511257; 1511258; 1211437; 1511439

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1562 (147840)

General Set Information: There were ten field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 444330) was less than 1/2 the CRDL. The recovery for the LCS (444331) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511256001. The percent recoveries were outside of performance limits. The relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APR15C-02/03/11/20.

Thomas Bosch — April 29, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Report Date: April 29, 2015

Debra Musser
ALS Environmental- Middletown
34 Dogwood Lane
Middletown, PA 17057

Phone: 717 944-5541 x 3162

E-mail: Debra.musser@alsglobal.com

Workorder: **34-1511257**
Project ID: 2065603
Purchase Order: 2065603

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
2065603 011	1511257001	04/15/15	04/22/15	

ANALYTICAL REPORT

Workorder: 34-1511257
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

ALS Work Order #'s & Sample #( )'s: 1511256 (001,02); 1511257 (001); 1511258 (001-04); 1511437 (001-02); 1511439 (001)
ELMS Batch/HBN ID: 1562 (147840)
Prep Date: 04/28/2015 Analysis Date: 04/28/2015 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence:\\HPCHEM\1\SEQUENCE\CLO4\2015\APR\28APR15P.s
Instrument MDL: **0.06µg/L** Reported PQL: **0.2µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 27894. Dilutions of Working Standard Solution ID 27896 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 08/14/2014, sequence 14AUG14P.s Offline Quantitation Method: CLO4OFF1.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89. Tuned: 8/14/2014 Tune Checked: 8/14/2014
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 2 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 85% Eluent A1; 15% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.52
4.0	0.52
5.0	0.25
14.5	0.25
15.0	0.52
17.5	0.52

QC DATA: 5.0µL of QC Solution Horizon ID 27897 was used for LCS 444331; Target = 5.0µg/L. ASTM type II water was used for LMB 444330.

MS/MSD: MS/MSD was performed on sample 1511256001 (Client ID: 2065944 003). 5.0µl of Working Standard Solution Horizon ID 27895 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335). The ion ratio of m/z 83 to 85 often fails at levels near or below the Limit of Detection (LODV). The ion ratio failed for the LODV's-1,2 (444328/335) and field samples 1511256002 and 1511257001.
3) Sample data can be viewed at two directories within the ALS system: \ALSLTWS013\DataReview\HBN# or throughNuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, many of the chromatographic peaks require manual integration. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APRC-02/03/11/20.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511257

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 444330
Analyzed: 04/28/2015 14:25
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 444331
Analyzed: 04/28/2015 14:46
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1511256001	**MS:**	444332	**MSD:**	444333
Analyzed:	04/28/2015 15:05	**Analyzed:**	04/28/2015 15:24	**Analyzed:**	04/28/2015 15:43
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.800	4.62	5	* 76.4	85.3	112.8	4.74	78.9	2.57	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511257

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	444326			**CCV:**	444334	
Analyzed:	04/28/2015 13:09			**Analyzed:**	04/28/2015 18:53	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.0	25.0	104	24.6	25.0	98.4

Interference Check Sample

ICSA:	444329
Analyzed:	04/28/2015 14:06
Units:	ug/L
Criteria:	± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	444328			**LODV:**	444335	
Analyzed:	04/28/2015 13:47			**Analyzed:**	04/28/2015 19:12	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.145	0.100	145	0.163	0.100	* 163

Comments

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect.
The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	4/29/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

AutoTitrator Instrument File Printout

Queue: WETC Analytical Batch: 152909 Temp Batch: 152909 Instrument: AUTOT

	#	Sample Id	Type	pH	Temp	Cond	ALKT	ALKP	CO3	HCO3	OH	Run Date	Analyst
	96611	2165852	STD 4	4.0101	27.4532							4/18/2015 3:16:08 AM	MBW
	96612	2165853	STD 7	6.9972	27.6162							4/18/2015 3:23:26 AM	MBW
	96613	2165854	STD 10	9.9974	27.5959							4/18/2015 3:30:45 AM	MBW
*	96615	2165855	MB	6.7095	27.5347	0.7800	0.9500	0.0000	0.0000	0.9500	0	4/18/2015 3:53:36 AM	MBW
*	96617	2165856	STDL	9.7820	27.4328		50.6852	11.3883	22.7766	27.9086	0	4/18/2015 4:18:31 AM	MBW
	96618	2165857	CCV1			1435.0000						4/18/2015 4:20:15 AM	MBW
	96619	2165858	CCV2			9920.0000						4/18/2015 4:22:00 AM	MBW
	96620	2165859	CCV3			95100.0000						4/18/2015 4:23:45 AM	MBW
	96621	2165864	DUP	7.6481	27.3920	81.7000	21.2211	0.0000	0.0000	21.2211	0	4/18/2015 4:34:55 AM	MBW
	96622	2065039003	SAMPL	7.5524	27.1881	76.3000	23.3303	0.0000	0.0000	23.3303	0	4/18/2015 4:46:47 AM	MBW
	96623	2065549001	SAMPL	10.3387	27.2901							4/18/2015 4:54:04 AM	MBW
*	96624	2065603011	SAMPL	6.7031	27.3920	96.4000	36.4459	0.0000	0.0000	36.4459	0	4/18/2015 5:04:32 AM	MBW
	96625	2065714001	SAMPL	8.0168	27.5347							4/18/2015 5:11:49 AM	MBW
	96626	2065714002	SAMPL	8.0383	27.4124							4/18/2015 5:19:07 AM	MBW
	96627	2065714003	SAMPL	8.1047	27.4736							4/18/2015 5:26:26 AM	MBW
	96628	2065723001	SAMPL	6.3651	27.4328	154.2000	12.3594	0.0000	0.0000	12.3594	0	4/18/2015 5:37:17 AM	MBW
	96629	2065723002	SAMPL	7.1451	27.5755	168.0000	64.6174	0.0000	0.0000	64.6174	0	4/18/2015 5:48:35 AM	MBW
	96630	2065723003	SAMPL	7.2410	27.5347	641.0000	273.4404	0.0000	0.0000	273.4404	0	4/18/2015 6:00:56 AM	MBW
	96631	2065723004	SAMPL	6.1656	27.6570	113.7000	45.9036	0.0000	0.0000	45.9036	0	4/18/2015 6:11:16 AM	MBW
	96632	2165865	STD 7	7.0119	27.7385							4/18/2015 6:18:34 AM	MBW
*	96633	2165866	STDL	9.6806	27.5755		51.5597	9.2246	18.4493	33.1104	0	4/18/2015 6:31:52 AM	MBW
*	96634	2165867	MB	9.1527	27.6366		2.8793	0.6942	1.3884	1.4909	0	4/18/2015 6:44:51 AM	MBW
	96635	2165868	DUP	5.3668	27.5755	81.4000	3.0465	0.0000	0.0000	3.0465	0	4/18/2015 6:55:52 AM	MBW
	96636	2065723005	SAMPL	5.3811	27.5347	80.2000	2.8125	0.0000	0.0000	2.8125	0	4/18/2015 7:05:46 AM	MBW

First Review Date/By: _____

Second Review Date/By: _____

Approved Date/By: _____

Date Printed: 4/21/2015 1:21:18 AM

File Name: \\NAMDTWS001\public\WET CHEM DEPT\Group D Benchsheets\AutoTitrate\2015 - Autotitrate\152909.TXT

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 2320B

SDG No.: TMM-016

Instrument ID: PC-Titration Plus

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/18/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/18/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Alkalinity	50	51	101		90-110	50	52	103					90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 2320B SDG No.: TMM-016

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/18/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/18/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Alkalinity	0.95	J	2.88	J								

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Batch No. 31994 HBN No. 69759	Ammonia Distillation D # 1			Rev. by/Date: NJA 4/29/15	
Sample	Volume (mL) or Weight (g) /150ml	Residual Chlorine (+/-)	Time Started	Date	Tech
* 2170002-MB	150mL	_	9:16:00 AM	4/28/2015	J1H
* 2170003-LCS	150mL	_	9:16:00 AM	4/28/2015	J1H
2064452001-A	25mL	_	9:16:00 AM	4/28/2015	J1H
2064497001-A	5mL	_	9:16:00 AM	4/28/2015	J1H
2064987006-C	50mL	_	9:16:00 AM	4/28/2015	J1H
2170004-DUP	50mL	_	9:16:00 AM	4/28/2015	J1H
2065041001-C	150mL	_	9:16:00 AM	4/28/2015	J1H
2065041002-C	150mL	_	9:16:00 AM	4/28/2015	J1H
2065046001-C	150mL	_	9:16:00 AM	4/28/2015	J1H
2170005-MS	150mL	_	9:16:00 AM	4/28/2015	J1H
2065046002-C	150mL	_	9:16:00 AM	4/28/2015	J1H
* 2065603011-F	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563001-G	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563002-G	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563003-G	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563004-G	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563005-G	150mL	_	9:16:00 AM	4/28/2015	J1H
2170006-DUP	150mL	_	9:16:00 AM	4/28/2015	J1H
2065563006-G	50mL	_	9:16:00 AM	4/28/2015	J1H
2065563007-G	50mL	_	9:16:00 AM	4/28/2015	J1H

Standards

LCS WS150423027

Spiking Solution 140522003

Reagents

30% NaOH 140204007

Borate Buffer WR150419002

Pheno. Indicator WR150419004

0.04N H_2SO_4 WR150426001

wet c# 153370

Pipettes 2011-01

Ammonia/TKN Analysis by ISE

Prep Batch #:	31994	Date Analyzed:	4/29/2015	1st Reviewed By and Date:	J1H 4/29/15
Analysis Batch #:	153370	Time Analyzed:	9:12	2nd Reviewed By and Date:	NJA 4/29/15
NH3/TKN:	NH3	Analyst:	J1H	Approved By and Date:	NJA 4/29/15
Calibration Date/Time:	4/28/2015 12:11				

	Distilled	Non-Distilled	Sample No.	Pre Distillation Prep Factor (X/150)	Post Distillation Dilution	pH >11	Meter Reading NH3, mg/L	Final Result NH3	%Recovery or %RPD
*		X	BLANK	150	1	X	0.00921	0.00921	✓
*		X	10 QC	150	1	X	10	10	100%
*	X		2170002-MB	150	1	X	0.0372	0.0372	✓
*	X		2170003-LCS	150	1	X	10	10	100%
	X		2064452001-A	25	1	X	4.2	25.2	
	X		2064497001-A	5	1	X	4.1	123	
	X		2064987006-C	50	1	X	26.8	80.4	
	X		2170004-DUP	50	1	X	26.5	79.5	1.13%
	X		2065041001-C	150	1	X	0.0577	0.0577	
	X		2065041002-C	150	1	X	0.0444	0.0444	
	X		2065046001-C	150	1	X	0.0449	0.0449	
	X		2170005-MS	150	1	X	7.09	7.09	106%
*		X	BLANK	150	1	X	0.0635	0.0635	✓
*		X	10 QC	150	1	X	10.1	10.1	101%
	X		2065046002-C	150	1	X	0.0922	0.0922	
*	X		2065603011-F	50	1	X	0.0503	0.1509	
	X		2065563001-G	50	1	X	0.0327	0.0981	
	X		2065563002-G	50	1	X	0.047	0.141	
	X		2065563003-G	50	1	X	0.041	0.123	
	X		2065563004-G	50	1	X	0.0428	0.1284	
	X		2065563005-G	150	1	X	0.139	0.139	
	X		2170006-DUP	150	1	X	0.141	0.141	1.43%
	X		2065563006-G	50	1	X	0.0296	0.0888	
	X		2065563007-G	50	1	X	0.0262	0.0786	
*		X	BLANK	150	1	X	0.0193	0.0193	✓
*		X	10 QC	150	1	X	10	10	100%
	X								
	X								
	X								
	X								
		X	BLANK	150	1	X	NJA		
		X	10 QC	150	1	X			

4/29/15

Comments:

Ammonia Calibration

Date and Time Performed	4/28/2015 12:11
Expiration Date and Time	4/29/2015 12:11
Analyst	J1H

Batches	
TKN	Ammonia
153229	153370
153375	

Calibration Standards	
0.10 ppm Standard	WS150426005
1.00 ppm Standard	WS150426004
10.0 ppm Standard	WS150426003
100.0 ppm Standard	WS150426002

Slope (-mv) Acceptance Limits -54 to -60 mV	-57 ✓

10QC Continuing Check Standard	WS150423027
Spiking Solution For Free Ammonia	140522003
10N NaOH	WR150226008

Reviewed By/Date:	NJA 4/29/15
Approved By/Date:	

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D

SDG No.: TMM-016

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/29/15 (2)		Continuing Calibration Blanks (mg/L) (1)4/29/15 (2)		(1)4/29/15 (2)		(1) (2)		Preparation Blank A ID: 2170002 (1)4/29/15 (2)		Preparation Blank B ID: (1) (2)	
Total Ammonia-Nitrogen	0.10	U	0.10	U	0.10	U			0.10	U		

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-016

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	10.0	100		90-110	10.0	10.1	101		10.0	100		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 4500NH3D
SDG No.: TMM-016

Matrix (soil/water): water
Lab Sample ID: 2170003
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/29/2015
Instrument ID: ISE
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	10.0	100		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Title: 041615
Datasource: WETCHEMIC
Location: ICS2000\ICS2000 Sequence\ANIONS\2015\5-1504
Timebase: ICS2000
#Samples: 93
Created: 4/16/2015 12:23:54 AM by almdt.nouser
Last Update: 4/16/2015 8:27:44 AM by almdt.nouser

	No.	Pos.	Name	*DilutionFactor	*SampleType	Comment	Program	Method	*Analyst	*Batch	*Queue
	1	2	CAL STD 1				300_0	A5_031815	FSC		WETC
	2	3	CAL STD 2				300_0	A5_031815	FSC		WETC
	3	4	CAL STD 3				300_0	A5_031815	FSC		WETC
	4	5	CAL STD 4				300_0	A5_031815	FSC		WETC
	5	6	CAL STD 5				300_0	A5_031815	FSC		WETC
	6	7	CAL STD 6				300_0	A5_031815	FSC		WETC
	7	8	CAL STD 7				300_0	A5_031815	FSC		WETC
	8	9	CAL STD 8				300_0	A5_031815	FSC		WETC
	9	10	CAL STD 9				300_0	A5_031815	FSC		WETC
	10	2	CAL STD 1				300_0	L5_031815	FSC		WETC
	11	3	CAL STD 2				300_0	L5_031815	FSC		WETC
	12	4	CAL STD 3				300_0	L5_031815	FSC		WETC
	13	5	CAL STD 4				300_0	L5_031815	FSC		WETC
	14	6	CAL STD 5				300_0	L5_031815	FSC		WETC
	15	7	CAL STD 6				300_0	L5_031815	FSC		WETC
*	16	1	2164682	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
*	17	2	2164683	1	CCVL	1A	300_0	A5_031815	SSL	152792	WETC
*	18	3	CCV LEVEL 1L	1		1L	300_0	L5_031815	SSL	152792	WETC
	19	4	2164684	1	LCS	SSA	300_0	A5_031815	SSL	152792	WETC
	20	5	SSL	1		SSL	300_0	L5_031815	SSL	152792	WETC
*	21	6	2164685	1	CCVH	2A	300_0	A5_031815	SSL	152792	WETC
*	22	7	CCV LEVEL 2L	1		2L	300_0	L5_031815	SSL	152792	WETC
	23	8	2065140001	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	24	9	2065140003	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	25	10	2065141002	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	26	11	2065141003	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	27	12	2065163001	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	28	13	2065167001	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	29	14	2065099001	2	SAMPLE	NJ	300_0	A5_031815	SSL	152792	WETC
	30	15	2065048002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	31	16	2164893	1	MS		300_0	A5_031815	SSL	152792	WETC
	32	17	2164894	1	MSD		300_0	A5_031815	SSL	152792	WETC
	33	18	2164895	1	CCVL	1A	300_0	A5_031815	SSL	152792	WETC
	34	19	CCV LEVEL 1L	1		1L	300_0	L5_031815	SSL	152792	WETC
	35	20	2164946	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
	36	21	2065229003	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	37	22	2065048008	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	38	23	2065048009	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	39	24	2065048010	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	40	25	2065039002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	41	26	2065042001	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC

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Title: 041615
Datasource: WETCHEMIC
Location: ICS2000\ICS2000 Sequence\ANIONS\2015\5-1504
Timebase: ICS2000
#Samples: 93
Created: 4/16/2015 12:23:54 AM by almdt.nouser
Last Update: 4/16/2015 8:27:44 AM by almdt.nouser

	No.	Pos.	Name	*DilutionFactor	*SampleType	Comment	Program	Method	*Analyst	*Batch	*Queue
	42	27	2065042002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	43	28	2065042003	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	44	29	2065042004	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	45	30	2164897	1	MS		300_0	A5_031815	SSL	152792	WETC
*	46	31	2164898	1	CCVH	2A	300_0	A5_031815	SSL	152792	WETC
*	47	32	CCV LEVEL 2L	1		2L	300_0	L5_031815	SSL	152792	WETC
*	48	33	2164899	1	LCS	SSA	300_0	A5_031815	SSL	152792	WETC
*	[redacted]	34	SSL	1		SSL	300_0	L5_031815	SSL	152792	WETC
*	50	35	2164900	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
	51	36	2065231001	100	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	52	37	2065231002	100	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	53	38	2065232001	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	54	39	2065232002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	55	40	2065232005	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	56	41	2065233001	10	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	57	42	2065246001	1	SAMPLE	DEP	300_0	A5_031815	SSL	152792	WETC
	58	43	2065246002	1	SAMPLE	DEP	300_0	A5_031815	SSL	152792	WETC
	59	44	2164901	1	MS		300_0	A5_031815	SSL	152792	WETC
	60	45	2164902	1	MSD		300_0	A5_031815	SSL	152792	WETC
*	61	46	2164903	1	CCVL	1A	300_0	A5_031815	SSL	152792	WETC
*	62	47	CCV LEVEL 1L	1		1L	300_0	L5_031815	SSL	152792	WETC
*	63	48	2164904	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
	64	49	2065343002	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	65	50	2065350001	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	66	1	2065350003	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	67	2	2065350004	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
*	68	3	MRL-MW-72B	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	69	4	2065300001	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	70	5	2065302002	1	SAMPLE	DEP	300_0	A5_031815	SSL	152792	WETC
	71	6	2065302002	5	SAMPLE	DEP	300_0	A5_031815	SSL	152792	WETC
	72	7	2065328002	2	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	73	8	2164905	2	MS		300_0	A5_031815	SSL	152792	WETC
*	74	9	2164906	1	CCVH	2A	300_0	A5_031815	SSL	152792	WETC
*	75	10	CCV LEVEL 2L	1		2L	300_0	L5_031815	SSL	152792	WETC
	76	11	2164907	1	LCS	SSA	300_0	A5_031815	SSL	152792	WETC
	77	12	SSL	1		SSL	300_0	L5_031815	SSL	152792	WETC
*	78	13	2164908	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
	79	14	2065274001	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	80	15	2065274002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	81	16	2065274003	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
	82	17	2065276001	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC

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Title: 041615
Datasource: WETCHEMIC
Location: ICS2000\ICS2000 Sequence\ANIONS\2015\5-1504
Timebase: ICS2000 Created: 4/16/2015 12:23:54 AM by almdt.nouser
#Samples: 93 Last Update: 4/16/2015 8:27:44 AM by almdt.nouser

No.	Pos.	Name	*DilutionFactor	*SampleType	Comment	Program	Method	*Analyst	*Batch	*Queue
83	18	2065276002	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
84	19	2065276003	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
85	20	2065276004	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
86	21	2065340001	5	SAMPLE		300_0	A5_031815	SSL	152792	WETC
87	22	2065276005	1	SAMPLE		300_0	A5_031815	SSL	152792	WETC
88	23	2164909	1	MS		300_0	A5_031815	SSL	152792	WETC
89	24	2164910	1	MSD		300_0	A5_031815	SSL	152792	WETC
90	25	2164911	1	CCVL	1A	300_0	A5_031815	SSL	152792	WETC
91	26	CCV LEVEL 1L	1		1L	300_0	L5_031815	SSL	152792	WETC
92	27	2164912	1	MB	BLANK	300_0	L5_031815	SSL	152792	WETC
93	28	SHUTDOWN				shutdown	A5_031815	SSL	152792	WETC

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Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-016

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%) (2)		Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%) (2)		Conc. Recovered (1)4/16/15	Recovery (%) (2)		Acc. Limit (%)
Chloride	20.0	19.1	96		90-110	20.0	--	--		19.2	96		90-110
Nitrite-Nitrogen	0.50	0.53	106		90-110	0.50	--	--		0.54	108		90-110
Nitrate-Nitrogen	2.50	2.52	101		90-110	2.50	--	--		2.52	101		90-110
Sulfate	20.0	19.9	99		90-110	20.0	--	--		20.0	100		90-110
Chloride	40.0	37.2	93		90-110	40.0	37.3	93		--	--		90-110
Nitrite-Nitrogen	1.00	1.06	106		90-110	1.00	1.08	108		--	--		90-110
Nitrate-Nitrogen	5.00	4.84	97		90-110	5.00	4.84	97		--	--		90-110
Sulfate	40.0	37.6	94		90-110	40.0	37.6	94		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-016

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%)	(2)	Conc. Recovered (1)4/16/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.51	100		90-110	2.50	--	--		2.60	104		90-110
Nitrite-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	0.50	0.52	104		90-110	0.50	--	--		0.52	104		90-110
Sulfate	2.50	2.51	100		90-110	2.50	--	--		2.47	99		90-110
Chloride	5.00	4.90	98		90-110	5.00	4.95	99		--	--		90-110
Nitrite-Nitrogen	1.00	1.00	100		90-110	1.00	1.01	101		--	--		90-110
Nitrate-Nitrogen	1.00	1.03	103		90-110	1.00	1.02	102		--	--		90-110
Sulfate	5.00	4.86	97		90-110	5.00	4.94	99		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0

SDG No.: TMM-016

Instrument ID: ICS2000

Concentration Units: mg/L

Analyte	Continuing Calibration										
	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	2.50	--	--								90-110
Sulfate	20.0	--	--								90-110
Chloride	40.0	37.3	93								90-110
Nitrite-Nitrogen	1.00	1.08	108								90-110
Nitrate-Nitrogen	5.00	4.86	97								90-110
Sulfate	40.0	37.7	94								90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 6B2- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-016

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/16/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	0.50	--	--								90-110
Sulfate	2.50	--	--								90-110
Chloride	5.00	4.99	100								90-110
Nitrite-Nitrogen	1.00	1.01	101								90-110
Nitrate-Nitrogen	1.00	1.03	103								90-110
Sulfate	5.00	4.96	99								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-016

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	19.9	100		90-110	20.0	--	--		20.1	101		90-110
Nitrite-Nitrogen	0.50	0.53	106		90-110	0.50	--	--		0.51	102		90-110
Nitrate-Nitrogen	2.50	2.55	102		90-110	2.50	--	--		2.54	102		90-110
Sulfate	20.0	20.3	102		90-110	20.0	--	--		20.2	101		90-110
Chloride	40.0	38.0	95		90-110	40.0	38.2	95		--	--		90-110
Nitrite-Nitrogen	1.00	1.08	108		90-110	1.00	1.04	104		--	--		90-110
Nitrate-Nitrogen	5.00	4.88	98		90-110	5.00	4.87	97		--	--		90-110
Sulfate	40.0	37.9	95		90-110	40.0	37.7	94		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-016

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Conc. Recovered (1)4/17/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.49	100		90-110	2.50	--	--		2.57	103		90-110
Nitrite-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	0.50	0.52	104		90-110	0.50	--	--		0.49	98		90-110
Sulfate	2.50	2.52	101		90-110	2.50	--	--		2.37	95		90-110
Chloride	5.00	4.97	99		90-110	5.00	5.05	101		--	--		90-110
Nitrite-Nitrogen	1.00	0.98	98		90-110	1.00	1.01	101		--	--		90-110
Nitrate-Nitrogen	1.00	1.04	104		90-110	1.00	1.05	105		--	--		90-110
Sulfate	5.00	4.92	98		90-110	5.00	5.10	102		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-016

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/16/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/16/15	(2)	(1)4/16/15	(2)	(1)4/16/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.11	J	0.14	J	0.16	J	0.16	J				
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Sulfate	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-016

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/17/15 (2)		Continuing Calibration Blanks (mg/L) (1)4/17/15 (2)		(1)4/17/15 (2)		(1) (2)		Preparation Blank A ID: (1) (2)		Preparation Blank B ID: (1) (2)	
Chloride	0.13	J	0.20	J	0.22	J						
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U						
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U						
Sulfate	0.11	J	1.0	U	1.0	U						

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-016
Matrix (soil/water):	water	Lab Sample ID:	2164899
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/16/2015	Instrument ID:	ICS2000
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	19.6	98		90-110
Nitrite-nitrogen	0.50	0.54	108		90-110
Nitrate-nitrogen	2.50	2.56	102		90-110
Sulfate	20.0	20.2	101		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-016
Matrix (soil/water):	water	Lab Sample ID:	SSL
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/16/2015	Instrument ID:	ICS2000
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.43	97		90-110
Nitrite-nitrogen	0.50	0.49	98		90-110
Nitrate-nitrogen	0.50	0.49	98		90-110
Sulfate	2.50	2.29	92		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-016

Matrix (soil/water): water
Lab Sample ID: 2165544
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/17/2015
Instrument ID: DX-500
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	20.5	102		90-110
Nitrite-nitrogen	0.50	0.53	106		90-110
Nitrate-nitrogen	2.50	2.56	102		90-110
Sulfate	20.0	20.4	102		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-016

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/17/2015
Instrument ID: DX-500
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.55	102		90-110
Nitrite-nitrogen	0.50	0.47	94		90-110
Nitrate-nitrogen	0.50	0.46	92		90-110
Sulfate	2.50	2.43	97		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

analytic functional testing
varioTOC cube
serial number: 38123029

69546 / 153257
4-27-15 1110

Statistic report

No. Name	NPOC [mg/l]	TC [mg/l]
1 RUN IN 1	0.558	~~0.000~~
2 RUN IN 1	0.414	~~0.000~~
3 RUN IN 1	0.392	~~0.000~~
4 RUN IN 1	0.400	~~0.000~~
Mean value	0.441	0.000
Deviation, abs.	0.079	0.000
Deviation, rel. [%]	17.833	0.000
5 RUN IN 2	0.073	~~0.000~~
6 RUN IN 2	0.117	~~0.000~~
7 RUN IN 2	0.081	~~0.000~~
Mean value	0.090	0.000
Deviation, abs.	0.023	0.000
Deviation, rel. [%]	25.819	0.000
8 RUN IN 3	0.066	~~0.000~~
9 RUN IN 3	0.074	~~0.000~~
10 RUN IN 3	0.081	~~0.000~~
Mean value	0.074	0.000
Deviation, abs.	0.007	0.000
Deviation, rel. [%]	10.006	0.000
11 RUN IN 4	0.065	~~0.000~~
12 RUN IN 4	0.068	~~0.000~~
13 RUN IN 4	0.049	~~0.000~~
Mean value	0.061	0.000
Deviation, abs.	0.010	0.000
Deviation, rel. [%]	17.110	0.000
14 RUN IN 5	0.052	~~0.000~~
15 RUN IN 5	0.070	~~0.000~~
16 RUN IN 5	0.074	~~0.000~~
Mean value	0.066	0.000
Deviation, abs.	0.011	0.000
Deviation, rel. [%]	17.526	0.000
17 RUN IN 6	0.058	~~0.000~~
18 RUN IN 6	0.045	~~0.000~~

8 PPM QC STD. WS 150410007
5 PPM QC STD. WS 150410008
1 PPM QC STD WS 150410009
0.5 PPM STD WS 150410006

ANALYST PAG
ENTERED LJF 4/29/15
SECOND REVIEW PAG 4-29-15
APPROVED 4-29-15

Name: eassuperuser, Access: varioTOC superuser 4/28/2015 10:02:25 AM

vario TOC V2.2.3 (ef16cd0)6 2012-06-18, Liquid Mode, Ser. No.: 38123029
Elementar Analysensysteme GmbH

analytic functional testing
varioTOC cube
serial number: 38123029

Statistic report

No. Name	NPOC [mg/l]	TC [mg/l]
19 RUN IN 6	0.036	~~0.000~~
Mean value	0.046	0.000
Deviation, abs.	0.011	0.000
Deviation, rel. [%]	23.199	0.000
20 0.5 ppm npoc	0.500	~~0.000~~
21 0.5 ppm npoc	0.500	~~0.000~~
22 0.5 ppm npoc	0.500	~~0.000~~
Mean value	0.500	0.000
Deviation, abs.	0.000	0.000
Deviation, rel. [%]	0.000	0.000
23 1.0 ppm npoc	1.000	~~0.000~~
24 1.0 ppm npoc	1.000	~~0.000~~
25 1.0 ppm npoc	1.000	~~0.000~~
Mean value	1.000	0.000
Deviation, abs.	0.000	0.000
Deviation, rel. [%]	0.000	0.000
26 5.0 ppm npoc	5.000	~~0.000~~
27 5.0 ppm npoc	5.000	~~0.000~~
28 5.0 ppm npoc	5.000	~~0.000~~
Mean value	5.000	0.000
Deviation, abs.	0.000	0.000
Deviation, rel. [%]	0.000	0.000
29 10.0 ppm npoc	10.000	~~0.000~~
30 10.0 ppm npoc	10.000	~~0.000~~
31 10.0 ppm npoc	10.000	~~0.000~~
Mean value	10.000	0.000
Deviation, abs.	0.000	0.000
Deviation, rel. [%]	0.000	0.000
32 RUN IN 7	0.148	~~0.000~~
33 RUN IN 7	0.107	~~0.000~~
34 RUN IN 7	0.086	~~0.000~~
Mean value	0.113	0.000
Deviation, abs.	0.032	0.000

analytic functional testing
varioTOC cube
serial number: 38123029

Statistic report

	No. Name	NPOC [mg/l]	TC [mg/l]
	Deviation, rel. [%]	27.782	0.000
	35 1.0 QC 1	0.998	~~0.000~~
	36 1.0 QC 1	0.978	~~0.000~~
	37 1.0 QC 1	0.974	~~0.000~~
*	Mean value	0.984	0.000
	Deviation, abs.	0.013	0.000
	Deviation, rel. [%]	1.312	0.000
	38 ICB 1	0.256	~~0.000~~
	39 ICB 1	0.159	~~0.000~~
	40 ICB 1	0.129	~~0.000~~
	41 ICB 1	0.139	~~0.000~~
*	Mean value	0.171	0.000
	Deviation, abs.	0.058	0.000
	Deviation, rel. [%]	33.917	0.000
	42 0.5 STD. 1	0.459	~~0.000~~
	43 0.5 STD. 1	0.479	~~0.000~~
	44 0.5 STD. 1	0.484	~~0.000~~
	Mean value	0.474	0.000
	Deviation, abs.	0.014	0.000
	Deviation, rel. [%]	2.859	0.000
	45 DISS. BLANK	0.003	~~0.000~~
	46 DISS. BLANK	0.000	~~0.000~~
	47 DISS. BLANK	0.005	~~0.000~~
	48 DISS. BLANK	0.006	~~0.000~~
*	Mean value	0.004	0.000
	Deviation, abs.	0.003	0.000
	Deviation, rel. [%]	79.505	0.000
	49 5.0 QC DISS.	5.076	~~0.000~~
	50 5.0 QC DISS.	5.115	~~0.000~~
	51 5.0 QC DISS.	5.178	~~0.000~~
*	Mean value	5.123	0.000
	Deviation, abs.	0.051	0.000
	Deviation, rel. [%]	1.001	0.000

98%

95%

102%

analytic functional testing
varioTOC cube
serial number: 38123029

Statistic report

No.	Name	NPOC [mg/l]	TC [mg/l]
52	2067034001	2.976	~~0.000~~
53	2067034001	5.419	~~0.000~~
54	2067034001	7.974	~~0.000~~
55	2067034001	11.195	~~0.000~~
	Mean value	6.891	0.000
	Deviation, abs.	3.521	0.000
	Deviation, rel. [%]	51.094	0.000
56	RUN IN 8	1.838	0.000
57	RUN IN 8	1.374	~~0.000~~
58	RUN IN 8	1.284	~~0.000~~
59	RUN IN 8	1.150	~~0.000~~
	Mean value	1.411	0.000
	Deviation, abs.	0.299	0.000
	Deviation, rel. [%]	21.174	0.000
60	RUN IN 9	1.031	~~0.000~~
61	RUN IN 9	0.892	~~0.000~~
62	RUN IN 9	0.896	~~0.000~~
	Mean value	0.939	0.000
	Deviation, abs.	0.079	0.000
	Deviation, rel. [%]	8.441	0.000
63	2065319005 X5	4.092	~~0.000~~
64	2065319005 X5	4.144	~~0.000~~
65	2065319005 X5	4.007	~~0.000~~
	Mean value	4.081	0.000
	Deviation, abs.	0.069	0.000
	Deviation, rel. [%]	1.696	0.000
66	2065603011 D	1.636	~~0.000~~
67	2065603011 D	1.508	~~0.000~~
68	2065603011 D	1.463	~~0.000~~
*	Mean value	1.535	0.000
	Deviation, abs.	0.090	0.000
	Deviation, rel. [%]	5.838	0.000

RR (see page 17)

analytic functional testing
varioTOC cube
serial number: 38123029

Statistic report

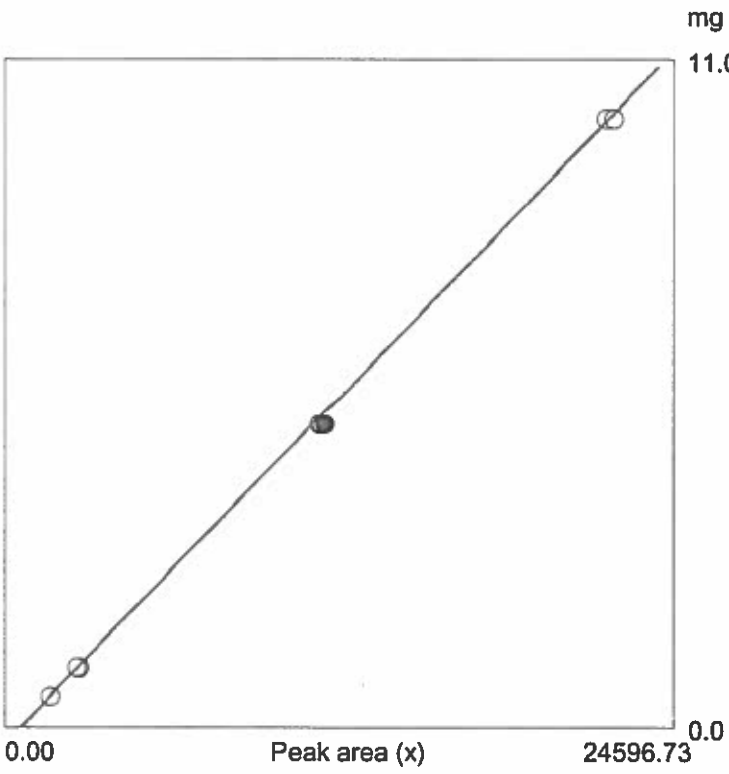
No. Name	NPOC [mg/l]	TC [mg/l]	
Mean value	1.971	0.000	
Deviation, abs.	0.027	0.000	
Deviation, rel. [%]	1.386	0.000	
87 2065541001	2.250	~~0.000~~	
88 2065541001	2.298	~~0.000~~	
89 2065541001	2.284	~~0.000~~	
Mean value	2.277	0.000	
Deviation, abs.	0.025	0.000	
Deviation, rel. [%]	1.096	0.000	
90 2065541001 MS	8.333	~~0.000~~	
91 2065541001 MS	8.347	~~0.000~~	102%
92 2065541001 MS	8.362	~~0.000~~	
Mean value	8.348	0.000	
Deviation, abs.	0.014	0.000	
Deviation, rel. [%]	0.173	0.000	
93 2065541001 MSD	8.340	~~0.000~~	
94 2065541001 MSD	8.409	~~0.000~~	102%
95 2065541001 MSD	8.397	~~0.000~~	
Mean value	8.382	0.000	
Deviation, abs.	0.037	0.000	
Deviation, rel. [%]	0.437	0.000	
96 5.0 QC 1	5.343	~~0.000~~	
97 5.0 QC 1	5.381	~~0.000~~	107%
98 5.0 QC 1	5.379	~~0.000~~	
* Mean value	5.367	0.000	
Deviation, abs.	0.021	0.000	
Deviation, rel. [%]	0.400	0.000	
99 CCB 1	0.353	~~0.000~~	
100 CCB 1	0.300	~~0.000~~	
101 CCB 1	0.286	~~0.000~~	
102 CCB 1	0.242	~~0.000~~	
* Mean value	0.295	0.000	
Deviation, abs.	0.046	0.000	

analytic functional testing
varioTOC cube
serial number: 38123029

TOC 3
69546 / 153257

Calibration report

NPOC calibration, 'Default'



10 PPM STD. WS 150410003
5 PPM STD. WS 150410004
1 PPM STD. WS 150410005
0,5 PPM STD. WS 150410006

a = -2.900716e-004
b = +4.621608e-007
c = +0.000000e+000
d = +0.000000e+000
e = +0.000000e+000
r = 0.999840
r_old = 0.999840
Proc.-SD = 0.052684 mg/l

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A
SDG No.: TMM-016

Instrument ID: Vario TOC
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/27/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/27/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.98	98		85-115	5.00	5.37	107					90-110
						8.00	--	--					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 9060A
SDG No.: TMM-016

Matrix (soil/water): water
Lab Sample ID: 5.0 mg/L QC DISS
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/27/2015
Instrument ID: Vario TOC
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Organic Carbon, Dissolved	5.00	5.12	102		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 9060A

SDG No.: TMM-016

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/27/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/27/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: DISS BLANK (1)4/27/15	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	0.295	J					--	--		
TOC, Dissolved	--	--	--	--					1.0	U		

(1) Analysis Date

(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JUNE 8, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC / 1,4-DIOXANE / METALS/PERCHLORATE**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2065612R

SAMPLES: 7/Aqueous/VOC/Metals

MRC-MW-08A-041615	MRC-MW-53A-041615	MRC-MW-53B-041615
MRC-MW-71A-041615	MRC-MW-71B-041615	MRC-MW-DUP01-041615
TB-041615		

7/Aqueous/1,4-Dioxane

MRC-MW-08A-041615	MRC-MW-53A-041615	MRC-MW-53B-041615
MRC-MW-54B-041615	MRC-MW-71A-041615	MRC-MW-71B-041615
MRC-MW-DUP01-041615		

4/Aqueous/Perchlorate

MRC-MW-08A-041615	MRC-MW-53A-041615	MRC-MW-53B-041615
MRC-MW-54B-041615		

Overview

The sample set for Lockheed- MRC, SDG 2065612R consists of six (6) aqueous environmental samples and a trip blank. Six (6) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Six (6) aqueous environmental samples were analyzed for 1.4-dioxane. Six (6) aqueous environmental samples were analyzed for metals. Four (4) aqueous environmental samples were analyzed for perchlorate. There is one (1) field duplicate pair included in this SDG: MRC-MW-DUP01-041615 and MRC-MW-71B-041615.

The samples were collected on April 16, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, 7470A, and 6850 and EPA Method 522 analytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation, and detection limits.

Areas of concern with respect to data quality are listed below.

Major Problems

- The initial calibration relative response factor (RRF) for 1,4-dioxane was less than the 0.01 quality control limit in the VOC fraction on April 17, 2015 on instrument ms15.i and in the continuing calibration on April 21, 2015 @ 10:19 and April 23, 2015 @ 11:17. The nondetected 1,4-dioxane results were qualified as rejected (UR).

Minor Problems

- The continuing calibration percent differences (%Ds) for bromomethane, carbon disulfide, methyl cyclohexane, and dichlorodifluoromethane on April 23, 2015 @ 11:17 on instrument ms15.i. The nondetected bromomethane, carbon disulfide, methyl cyclohexane, and dichlorodifluoromethane results in the affected samples were qualified as estimated (UJ).

- Contamination was detected in the laboratory method blank associated with batches 2167095 and 2168523.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane (1)	0.67	3.35
Bromomethane (2)	0.62	3.1

(1) Maximum concentration detected in laboratory method blank associated with batch 2167095 analyzed on 4/21/15.
(2) Maximum concentration of contaminant detected in laboratory method blank associated with batch 2168523 analyzed on 4/23/15.

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. Detected results less than the action level were qualified as (U).

- The laboratory control sample (LCS) percent recovery (%R) of cis-1,3-dichloropropene was less than the lower quality control limit in batch 2167096. The nondetected cis-1,3-dichloropropene results were qualified as estimated (UJ).

- Molybdenum was detected in the laboratory preparation blank associated with batch 2166237.

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.00075	0.00375

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. Detected results less than the action level were qualified as (U).

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

The LCS %Rs of trans-1,2-dichloroethene and methylene chloride were greater than the upper quality control limit in batch 2168254. No action was taken on the nondetected trans-1,2-dichloroethene and methylene chloride results in the affected samples.

1,4-dioxane was reported in both the 8260B method and 522 method.

The matrix spike/ matrix spike duplicate (MS/MSD) percent recoveries (%Rs) of perchlorate were less than the lower quality control limit in spiked sample 1511256001. This sample is not included in this SDG. No action was taken.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The RRF of 1,4-dioxane was less than the quality control limit in the VOC fraction. Bromomethane and molybdenum were detected in the laboratory blanks. The continuing calibration %Ds for several VOC analytes exceeded quality control limits. The LCS %R of cis-1,3-dichloropropene was less than the lower quality control limit.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech
Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-08A-041615			MRC-MW-53A-041615			MRC-MW-53B-041615			MRC-MW-71A-041615		
SDG: 2065612R	LAB_ID	2065612008			2065612007			2065612006			2065612002		
FRACTION: M	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.0011	J	P	0.00086	J	P	0.0039		
ARSENIC		0.001	U		0.0013	J	P	0.001	U		0.001	U	
BARIUM		0.15			0.31			0.21			0.03		
BERYLLIUM		0.00074	J	P	0.0029			0.001			0.00065	J	P
CADMIUM		0.00037	U		0.002			0.00037	U		0.00037	U	
CHROMIUM		0.002	J	P	0.0027			0.0012	J	P	0.005		
COBALT		0.11			1.4			0.057			0.0019	U	
COPPER		0.0035	J	P	0.041			0.0059			0.0043	J	P
IRON		47.4			0.26			1.4			0.86		
LEAD		0.0012	J	P	0.00074	U		0.00074	U		0.00095	J	P
MANGANESE		45.9			1.6			1.1			0.053		
MERCURY		0.00017	U		0.00043	J	P	0.00017	U		0.00017	U	
MOLYBDENUM		0.00074	U		0.00093	U	A	0.00078	U	A	0.0022	U	A
NICKEL		0.26			1.2			0.081			0.0077		
SELENIUM		0.0019	U		0.0024	J	P	0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.0016	J	P	0.0013	J	P	0.00074	U		0.011		

PROJ_NO: 06247	NSAMPLE	MRC-MW-71B-041615			MRC-MW-DUP01-041615		
SDG: 2065612R	LAB_ID	2065612003			2065612004		
FRACTION: M	SAMP_DATE	4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				MRC-MW-71B-041615		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U	
ARSENIC		0.001	U		0.001	U	
BARIUM		0.041			0.041		
BERYLLIUM		0.0003	U		0.0003	U	
CADMIUM		0.00037	U		0.00037	U	
CHROMIUM		0.00085	J	P	0.00092	J	P
COBALT		0.025			0.024		
COPPER		0.0019	U		0.0019	U	
IRON		10.1			10		
LEAD		0.00074	U		0.00074	U	
MANGANESE		1.2			1.2		
MERCURY		0.00017	U		0.00017	U	
MOLYBDENUM		0.00074	U		0.0012	U	A
NICKEL		0.037			0.037		
SELENIUM		0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U	
VANADIUM		0.00074	U		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-08A-041615			MRC-MW-53A-041615			MRC-MW-53B-041615			MRC-MW-54A-041615		
SDG: 2065612R	LAB_ID	008			007			006			001		
FRACTION: MISC	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERCHLORATE		0	U		2.6			4.1			0	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-08A-041615			MRC-MW-53A-041615			MRC-MW-53B-041615			MRC-MW-54A-041615		
SDG: 2065612R	LAB_ID	2065612008			2065612007			2065612006			2065612001		
FRACTION: OS	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.33			4			14.1			0.2		

PROJ_NO: 06247	NSAMPLE	MRC-MW-71A-041615			MRC-MW-71B-041615			MRC-MW-DUP01-041615		
SDG: 2065612R	LAB_ID	2065612002			2065612003			2065612004		
FRACTION: OS	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							MRC-MW-71B-041615		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.29			19.3			19.4		

PROJ_NO: 06247	NSAMPLE	MRC-MW-08A-041615			MRC-MW-53A-041615			MRC-MW-53B-041615			MRC-MW-53B-041615A		
SDG: 2065612R	LAB_ID	2065612008			2065612007			2065612006			2065612006		
FRACTION: OV	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U				
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U				
1,1-DICHLOROETHANE		0.28	U		0.28	U					0.37	J	P
1,1-DICHLOROETHENE		0.29	U		0.29	U		16.2					
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U				
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U				
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U				
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U				
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U				
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U				
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U				
1,4-DIOXANE		58.9	UR	C	58.9	UR	C	58.9	UR	C			
2-BUTANONE		1.8	U		1.8	U		1.8	U				
2-HEXANONE		1.3	U		1.3	U		1.3	U				
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U				
ACETONE		3.1	U		3.1	U		3.1	U				
BENZENE		0.23	U		10.3			1.2					
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U				
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U				
BROMOFORM		0.4	U		0.4	U		0.4	U				
BROMOMETHANE		0.55	U	A	0.52	U	A	0.39	U				
CARBON DISULFIDE		0.23	UJ	C	0.23	U		0.23	U				
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.5	J	P			
CHLOROBENZENE		0.19	U		0.19	U		0.19	U				
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U				
CHLOROETHANE		0.33	U		0.33	U		0.33	U				
CHLOROFORM		0.21	U		0.21	U		0.21	U				
CHLOROMETHANE		0.31	U		0.31	U		0.31	U				
CIS-1,2-DICHLOROETHENE		0.32	U		7.2			13.6					
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	UJ	E	0.31	UJ	E			
CYCLOHEXANE		0.29	U		0.29	U		0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-71A-041615			MRC-MW-71B-041615			MRC-MW-DUP01-041615			TB-041615		
SDG: 2065612R	LAB_ID	2065612002			2065612003			2065612004			2065612005		
FRACTION: OV	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							MRC-MW-71B-041615					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		1.2			1.3			0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.9	J	P	0.89	J	P	0.26	U	
1,1-DICHLOROETHANE		0.28	U		4.1			4.1			0.28	U	
1,1-DICHLOROETHENE		2			58			58.7			0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.5	J	P	0.47	J	P	0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	UR	C	58.9	UR	C	58.9	UR	C	58.9	UR	C
2-BUTANONE		1.8	U		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.64	U	A	0.39	U		0.39	U		0.49	J	P
CARBON DISULFIDE		0.23	UJ	C	0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		6.7			6.6			0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	UJ	E	0.31	UJ	E	0.31	UJ	E
CYCLOHEXANE		0.29	U		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-08A-041615			MRC-MW-53A-041615			MRC-MW-53B-041615			MRC-MW-53B-041615A		
SDG: 2065612R	LAB_ID	2065612008			2065612007			2065612006			2065612006		
FRACTION: OV	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	UJ	C	0.33	U		0.33	U				
ETHYLBENZENE		0.34	U		0.34	U		0.34	U				
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U				
M+P-XYLENES		0.52	U		0.52	U		0.52	U				
METHYL ACETATE		0.32	U		0.32	U		0.32	U				
METHYL CYCLOHEXANE		0.3	UJ	C	0.3	U		0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U		7.1			0.33	U				
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U				
O-XYLENE		0.33	U		0.38	J	P	0.33	U				
STYRENE		0.24	U		0.24	U		0.24	U				
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U				
TOLUENE		0.23	U		0.23	U		0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U		0.34	J	P	0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U				
TRICHLOROETHENE		0.33	U		41			246					
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U				
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-71A-041615			MRC-MW-71B-041615			MRC-MW-DUP01-041615			TB-041615		
SDG: 2065612R	LAB_ID	2065612002			2065612003			2065612004			2065612005		
FRACTION: OV	SAMP_DATE	4/16/2015			4/16/2015			4/16/2015			4/16/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							MRC-MW-71B-041615					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	UJ	C	0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	UJ	C	0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.76	J	P	0.76	J	P	0.46	J	P
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		45.5			44.5			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612001** Date Collected: 4/16/2015 09:10 Matrix: Ground Water

Sample ID: **MRC-MW-54A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES											
1,4-Dioxane	0.20		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 16:36	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	80.5		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 16:36	CGS	
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 16:40	SUB	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612002** Date Collected: 4/16/2015 11:10 Matrix: Ground Water

Sample ID: **MRC-MW-71A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 14:19	TMP	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 14:19	TMP	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:19	TMP	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 14:19	TMP	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 14:19	TMP	B
Bromomethane	0.64J	J	ug/L	1.0	0.39	SW846 8260C		4/23/15 14:19	TMP	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 14:19	TMP	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 14:19	TMP	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:19	TMP	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 14:19	TMP	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 14:19	TMP	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 14:19	TMP	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 14:19	TMP	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:19	TMP	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:19	TMP	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 14:19	TMP	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 14:19	TMP	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 14:19	TMP	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 14:19	TMP	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 14:19	TMP	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 14:19	TMP	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 14:19	TMP	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:19	TMP	B
1,1-Dichloroethene	2.0		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:19	TMP	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:19	TMP	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 14:19	TMP	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 14:19	TMP	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:19	TMP	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:19	TMP	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 14:19	TMP	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 14:19	TMP	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 14:19	TMP	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 14:19	TMP	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 14:19	TMP	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 14:19	TMP	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/23/15 14:19	TMP	B

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612002** Date Collected: 4/16/2015 11:10 Matrix: Ground Water

Sample ID: **MRC-MW-71A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:19	TMP	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/23/15 14:19	TMP	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/23/15 14:19	TMP	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 14:19	TMP	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/23/15 14:19	TMP	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/23/15 14:19	TMP	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/23/15 14:19	TMP	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/23/15 14:19	TMP	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/23/15 14:19	TMP	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/23/15 14:19	TMP	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:19	TMP	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:19	TMP	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 14:19	TMP	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/23/15 14:19	TMP	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:19	TMP	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/23/15 14:19	TMP	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133		SW846 8260C			4/23/15 14:19	TMP	B
4-Bromofluorobenzene (S)	88.7		%	79 - 114		SW846 8260C			4/23/15 14:19	TMP	B
Dibromofluoromethane (S)	92.4		%	78 - 116		SW846 8260C			4/23/15 14:19	TMP	B
Toluene-d8 (S)	99.8		%	76 - 127		SW846 8260C			4/23/15 14:19	TMP	B
SEMIVOLATILES											
1,4-Dioxane	0.29		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 17:03	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.6		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 17:03	CGS	
METALS											
Antimony, Total	0.0039		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Barium, Total	0.030		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Beryllium, Total	0.00065J	J	mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Chromium, Total	0.0050		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Cobalt, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Copper, Total	0.0043J	J	mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Iron, Total	0.86		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:31	SRT	F1
Lead, Total	0.00095J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612002** Date Collected: 4/16/2015 11:10 Matrix: Ground Water

Sample ID: **MRC-MW-71A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	0.053		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/21/15	MNP	4/21/15 14:43	MNP	F3
Molybdenum, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Nickel, Total	0.0077		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2
Vanadium, Total	0.011		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 02:59	ZMC	F2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612003** Date Collected: 4/16/2015 14:10 Matrix: Ground Water

Sample ID: **MRC-MW-71B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/21/15 18:44	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 18:44	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 18:44	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 18:44	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/21/15 18:44	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/21/15 18:44	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/21/15 18:44	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 18:44	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 18:44	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/21/15 18:44	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 18:44	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 18:44	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/21/15 18:44	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 18:44	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 18:44	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/21/15 18:44	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 18:44	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/21/15 18:44	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/21/15 18:44	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 18:44	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 18:44	TMP	A
1,1-Dichloroethane	4.1		ug/L	1.0	0.28	SW846 8260C		4/21/15 18:44	TMP	A
1,2-Dichloroethane	0.50J	J	ug/L	1.0	0.32	SW846 8260C		4/21/15 18:44	TMP	A
1,1-Dichloroethene	58.0		ug/L	1.0	0.29	SW846 8260C		4/21/15 18:44	TMP	A
cis-1,2-Dichloroethene	6.7		ug/L	1.0	0.32	SW846 8260C		4/21/15 18:44	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 18:44	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 18:44	TMP	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		4/21/15 18:44	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 18:44	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/21/15 18:44	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 18:44	TMP	A
Freon 113	0.90J	J	ug/L	1.0	0.26	SW846 8260C		4/21/15 18:44	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/21/15 18:44	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 18:44	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/21/15 18:44	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 18:44	TMP	A

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612003** Date Collected: 4/16/2015 14:10 Matrix: Ground Water

Sample ID: **MRC-MW-71B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 18:44	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/21/15 18:44	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/21/15 18:44	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 18:44	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/21/15 18:44	TMP	A
Tetrachloroethene	0.76J	J	ug/L	1.0	0.35	SW846 8260C			4/21/15 18:44	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/21/15 18:44	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/21/15 18:44	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/21/15 18:44	TMP	A
1,1,1-Trichloroethane	1.2		ug/L	1.0	0.22	SW846 8260C			4/21/15 18:44	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 18:44	TMP	A
Trichloroethene	45.5		ug/L	1.0	0.33	SW846 8260C			4/21/15 18:44	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 18:44	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/21/15 18:44	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 18:44	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/21/15 18:44	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C			4/21/15 18:44	TMP	A
4-Bromofluorobenzene (S)	90.5		%	79 - 114		SW846 8260C			4/21/15 18:44	TMP	A
Dibromofluoromethane (S)	87.9		%	78 - 116		SW846 8260C			4/21/15 18:44	TMP	A
Toluene-d8 (S)	95		%	76 - 127		SW846 8260C			4/21/15 18:44	TMP	A
SEMIVOLATILES											
1,4-Dioxane	19.3		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 17:27	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.4		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 17:27	CGS	
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Barium, Total	0.041		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Chromium, Total	0.00085J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Cobalt, Total	0.025		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Iron, Total	10.1		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:34	SRT	F1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612003** Date Collected: 4/16/2015 14:10 Matrix: Ground Water

Sample ID: **MRC-MW-71B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	1.2		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/23/15	MNP	4/23/15 13:29	MNP	F3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Nickel, Total	0.037		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:02	ZMC	F2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612004** Date Collected: 4/16/2015 00:00 Matrix: Ground Water

Sample ID: **MRC-MW-DUP01-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/21/15 19:02	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:02	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:02	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:02	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/21/15 19:02	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/21/15 19:02	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/21/15 19:02	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:02	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 19:02	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/21/15 19:02	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 19:02	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:02	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/21/15 19:02	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 19:02	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:02	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/21/15 19:02	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 19:02	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/21/15 19:02	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/21/15 19:02	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:02	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:02	TMP	A
1,1-Dichloroethane	4.1		ug/L	1.0	0.28	SW846 8260C		4/21/15 19:02	TMP	A
1,2-Dichloroethane	0.47J	J	ug/L	1.0	0.32	SW846 8260C		4/21/15 19:02	TMP	A
1,1-Dichloroethene	58.7		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:02	TMP	A
cis-1,2-Dichloroethene	6.6		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:02	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 19:02	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 19:02	TMP	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		4/21/15 19:02	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:02	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/21/15 19:02	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 19:02	TMP	A
Freon 113	0.89J	J	ug/L	1.0	0.26	SW846 8260C		4/21/15 19:02	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/21/15 19:02	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 19:02	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/21/15 19:02	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 19:02	TMP	A

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612004** Date Collected: 4/16/2015 00:00 Matrix: Ground Water

Sample ID: **MRC-MW-DUP01-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:02	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/21/15 19:02	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/21/15 19:02	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:02	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/21/15 19:02	TMP	A
Tetrachloroethene	0.76J	J	ug/L	1.0	0.35	SW846 8260C			4/21/15 19:02	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/21/15 19:02	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/21/15 19:02	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/21/15 19:02	TMP	A
1,1,1-Trichloroethane	1.3		ug/L	1.0	0.22	SW846 8260C			4/21/15 19:02	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:02	TMP	A
Trichloroethene	44.5		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:02	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:02	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/21/15 19:02	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:02	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/21/15 19:02	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C			4/21/15 19:02	TMP	A
4-Bromofluorobenzene (S)	88.2		%	79 - 114		SW846 8260C			4/21/15 19:02	TMP	A
Dibromofluoromethane (S)	88.3		%	78 - 116		SW846 8260C			4/21/15 19:02	TMP	A
Toluene-d8 (S)	96.1		%	76 - 127		SW846 8260C			4/21/15 19:02	TMP	A
SEMIVOLATILES											
1,4-Dioxane	19.4		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 17:54	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	83.8		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 17:54	CGS	
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Barium, Total	0.041		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Chromium, Total	0.00092J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Cobalt, Total	0.024		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Iron, Total	10.0		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:37	SRT	F1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612004** Date Collected: 4/16/2015 00:00 Matrix: Ground Water

Sample ID: **MRC-MW-DUP01-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	1.2		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/23/15	MNP	4/23/15 13:31	MNP	F3
Molybdenum, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Nickel, Total	0.037		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:20	ZMC	F2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612005** Date Collected: 4/16/2015 00:00 Matrix: Ground Water

Sample ID: **TB-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/21/15 15:36	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 15:36	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 15:36	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 15:36	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/21/15 15:36	TMP	A
Bromomethane	0.49J	J	ug/L	1.0	0.39	SW846 8260C		4/21/15 15:36	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/21/15 15:36	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 15:36	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 15:36	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/21/15 15:36	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 15:36	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/21/15 15:36	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 15:36	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 15:36	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/21/15 15:36	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 15:36	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/21/15 15:36	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/21/15 15:36	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 15:36	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 15:36	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 15:36	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 15:36	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 15:36	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 15:36	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 15:36	TMP	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		4/21/15 15:36	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 15:36	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/21/15 15:36	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 15:36	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 15:36	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/21/15 15:36	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 15:36	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/21/15 15:36	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 15:36	TMP	A

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612005** Date Collected: 4/16/2015 00:00 Matrix: Ground Water

Sample ID: **TB-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/21/15 15:36	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 15:36	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 15:36	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 15:36	TMP	A
Tetrachloroethene	0.46J	J	ug/L	1.0	0.35	SW846 8260C		4/21/15 15:36	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 15:36	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/21/15 15:36	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/21/15 15:36	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 15:36	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 15:36	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 15:36	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 15:36	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/21/15 15:36	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260C		4/21/15 15:36	TMP	A
4-Bromofluorobenzene (S)	88.1		%	79 - 114	SW846 8260C		4/21/15 15:36	TMP	A
Dibromofluoromethane (S)	87.4		%	78 - 116	SW846 8260C		4/21/15 15:36	TMP	A
Toluene-d8 (S)	95		%	76 - 127	SW846 8260C		4/21/15 15:36	TMP	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612006** Date Collected: 4/16/2015 09:00 Matrix: Ground Water

Sample ID: **MRC-MW-53B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/21/15 19:19	TMP	A
Benzene	1.2		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:19	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:19	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:19	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/21/15 19:19	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/21/15 19:19	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/21/15 19:19	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:19	TMP	A
Carbon Tetrachloride	0.50J	J	ug/L	1.0	0.31	SW846 8260C		4/21/15 19:19	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/21/15 19:19	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 19:19	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:19	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/21/15 19:19	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 19:19	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:19	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/21/15 19:19	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 19:19	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/21/15 19:19	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/21/15 19:19	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:19	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:19	TMP	A
1,1-Dichloroethane	0.37J	J	ug/L	1.0	0.28	SW846 8260C		4/21/15 19:19	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:19	TMP	A
1,1-Dichloroethene	16.2		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:19	TMP	A
cis-1,2-Dichloroethene	13.6		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:19	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 19:19	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 19:19	TMP	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		4/21/15 19:19	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:19	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/21/15 19:19	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 19:19	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 19:19	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/21/15 19:19	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 19:19	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/21/15 19:19	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 19:19	TMP	A

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612006** Date Collected: 4/16/2015 09:00 Matrix: Ground Water

Sample ID: **MRC-MW-53B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:19	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/21/15 19:19	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/21/15 19:19	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:19	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/21/15 19:19	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/21/15 19:19	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/21/15 19:19	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/21/15 19:19	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/21/15 19:19	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/21/15 19:19	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:19	TMP	A
Trichloroethene	246		ug/L	5.0	1.7	SW846 8260C			4/23/15 15:10	TMP	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:19	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/21/15 19:19	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:19	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/21/15 19:19	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133		SW846 8260C			4/23/15 15:10	TMP	B
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C			4/21/15 19:19	TMP	A
4-Bromofluorobenzene (S)	89.5		%	79 - 114		SW846 8260C			4/21/15 19:19	TMP	A
4-Bromofluorobenzene (S)	86.9		%	79 - 114		SW846 8260C			4/23/15 15:10	TMP	B
Dibromofluoromethane (S)	88.6		%	78 - 116		SW846 8260C			4/23/15 15:10	TMP	B
Dibromofluoromethane (S)	88		%	78 - 116		SW846 8260C			4/21/15 19:19	TMP	A
Toluene-d8 (S)	94.6		%	76 - 127		SW846 8260C			4/23/15 15:10	TMP	B
Toluene-d8 (S)	97.9		%	76 - 127		SW846 8260C			4/21/15 19:19	TMP	A
SEMIVOLATILES											
1,4-Dioxane	14.1		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 18:20	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	83.1		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 18:20	CGS	
METALS											
Antimony, Total	0.00086J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Barium, Total	0.21		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Beryllium, Total	0.0010		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Chromium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612006** Date Collected: 4/16/2015 09:00 Matrix: Ground Water

Sample ID: **MRC-MW-53B-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Cobalt, Total	0.057		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Copper, Total	0.0059		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Iron, Total	1.4		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:53	SRT	G1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Manganese, Total	1.1		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/23/15	MNP	4/23/15 13:34	MNP	G3
Molybdenum, Total	0.00078J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Nickel, Total	0.081		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:31	ZMC	G2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 17:18	SUB	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612007** Date Collected: 4/16/2015 10:10 Matrix: Ground Water

Sample ID: **MRC-MW-53A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/21/15 19:36	TMP	A
Benzene	10.3		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:36	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:36	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:36	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/21/15 19:36	TMP	A
Bromomethane	0.52J	J	ug/L	1.0	0.39	SW846 8260C		4/21/15 19:36	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/21/15 19:36	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/21/15 19:36	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 19:36	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/21/15 19:36	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/21/15 19:36	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:36	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/21/15 19:36	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/21/15 19:36	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:36	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/21/15 19:36	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 19:36	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/21/15 19:36	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/21/15 19:36	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/21/15 19:36	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/21/15 19:36	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/21/15 19:36	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:36	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:36	TMP	A
cis-1,2-Dichloroethene	7.2		ug/L	1.0	0.32	SW846 8260C		4/21/15 19:36	TMP	A
trans-1,2-Dichloroethene	0.34J	J	ug/L	1.0	0.26	SW846 8260C		4/21/15 19:36	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/21/15 19:36	TMP	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		4/21/15 19:36	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/21/15 19:36	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/21/15 19:36	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/21/15 19:36	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/21/15 19:36	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/21/15 19:36	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/21/15 19:36	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/21/15 19:36	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/21/15 19:36	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612007** Date Collected: 4/16/2015 10:10 Matrix: Ground Water

Sample ID: **MRC-MW-53A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	7.1		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:36	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/21/15 19:36	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/21/15 19:36	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:36	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/21/15 19:36	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/21/15 19:36	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/21/15 19:36	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/21/15 19:36	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/21/15 19:36	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/21/15 19:36	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:36	TMP	A
Trichloroethene	41.0		ug/L	1.0	0.33	SW846 8260C			4/21/15 19:36	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/21/15 19:36	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/21/15 19:36	TMP	A
o-Xylene	0.38J	J	ug/L	1.0	0.33	SW846 8260C			4/21/15 19:36	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/21/15 19:36	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133		SW846 8260C			4/21/15 19:36	TMP	A
4-Bromofluorobenzene (S)	89.6		%	79 - 114		SW846 8260C			4/21/15 19:36	TMP	A
Dibromofluoromethane (S)	88.1		%	78 - 116		SW846 8260C			4/21/15 19:36	TMP	A
Toluene-d8 (S)	96.9		%	76 - 127		SW846 8260C			4/21/15 19:36	TMP	A
SEMIVOLATILES											
1,4-Dioxane	4.0		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 18:47	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	83.1		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 18:47	CGS	
METALS											
Antimony, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Arsenic, Total	0.0013J	J	mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Barium, Total	0.31		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Beryllium, Total	0.0029		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Cadmium, Total	0.0020		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Chromium, Total	0.0027		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Cobalt, Total	1.4		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Copper, Total	0.041		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Iron, Total	0.26		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:56	SRT	G1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612007** Date Collected: 4/16/2015 10:10 Matrix: Ground Water

Sample ID: **MRC-MW-53A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	1.6		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Mercury, Total	0.00043J	J	mg/L	0.00050	0.00017	SW846 7470A	4/23/15	MNP	4/23/15 13:37	MNP	G3
Molybdenum, Total	0.00093J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Nickel, Total	1.2		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Selenium, Total	0.0024J	J	mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
Vanadium, Total	0.0013J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:35	ZMC	G2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 17:18	SUB	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612008** Date Collected: 4/16/2015 12:20 Matrix: Ground Water

Sample ID: **MRC-MW-08A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 14:36	TMP	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 14:36	TMP	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:36	TMP	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 14:36	TMP	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 14:36	TMP	B
Bromomethane	0.55J	J	ug/L	1.0	0.39	SW846 8260C		4/23/15 14:36	TMP	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 14:36	TMP	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 14:36	TMP	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:36	TMP	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 14:36	TMP	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 14:36	TMP	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 14:36	TMP	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 14:36	TMP	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:36	TMP	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:36	TMP	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 14:36	TMP	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 14:36	TMP	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 14:36	TMP	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 14:36	TMP	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 14:36	TMP	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 14:36	TMP	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 14:36	TMP	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:36	TMP	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:36	TMP	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 14:36	TMP	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 14:36	TMP	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 14:36	TMP	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 14:36	TMP	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 14:36	TMP	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 14:36	TMP	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 14:36	TMP	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 14:36	TMP	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 14:36	TMP	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 14:36	TMP	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 14:36	TMP	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/23/15 14:36	TMP	B

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ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612008** Date Collected: 4/16/2015 12:20 Matrix: Ground Water

Sample ID: **MRC-MW-08A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:36	TMP	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/23/15 14:36	TMP	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/23/15 14:36	TMP	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 14:36	TMP	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/23/15 14:36	TMP	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/23/15 14:36	TMP	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/23/15 14:36	TMP	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/23/15 14:36	TMP	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/23/15 14:36	TMP	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/23/15 14:36	TMP	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:36	TMP	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:36	TMP	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 14:36	TMP	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/23/15 14:36	TMP	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 14:36	TMP	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/23/15 14:36	TMP	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133		SW846 8260C			4/23/15 14:36	TMP	B
4-Bromofluorobenzene (S)	90.2		%	79 - 114		SW846 8260C			4/23/15 14:36	TMP	B
Dibromofluoromethane (S)	94.2		%	78 - 116		SW846 8260C			4/23/15 14:36	TMP	B
Toluene-d8 (S)	100		%	76 - 127		SW846 8260C			4/23/15 14:36	TMP	B
SEMIVOLATILES											
1,4-Dioxane	0.33		ug/L	0.070	0.014	EPA 522	4/22/15	JEK	4/23/15 19:13	CGS	
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	77.5		%	70 - 130		EPA 522	4/22/15	JEK	4/23/15 19:13	CGS	
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Barium, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Beryllium, Total	0.00074J	J	mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Chromium, Total	0.0020J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Cobalt, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Copper, Total	0.0035J	J	mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Iron, Total	47.4		mg/L	0.067	0.022	SW846 6010C	4/20/15	AAM	4/23/15 10:59	SRT	G1
Lead, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2065612 TMM017|MRC-GW 2015 Sampling

Lab ID: **2065612008** Date Collected: 4/16/2015 12:20 Matrix: Ground Water

Sample ID: **MRC-MW-08A-041615** Date Received: 4/16/2015 20:26

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	45.9		mg/L	0.056	0.019	SW846 6020A	4/20/15	AAM	4/21/15 04:24	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/23/15	MNP	4/23/15 13:38	MNP	G3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Nickel, Total	0.26		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
Vanadium, Total	0.0016J	J	mg/L	0.0022	0.00074	SW846 6020A	4/20/15	AAM	4/21/15 03:38	ZMC	G2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 17:37	SUB	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-017

Sample Management

This report contains the results of the analysis of eight (8) ground water samples collected on April 16, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 16, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Four (4) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Seven (7) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2167095, bromomethane was detected at 0.67J µg/L.
- In 2168253, bromomethane was detected at 0.62J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2167096, cis-1,3-dichloropropene was recovered below the control limits.
- In 2168254, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Seven (7) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.00142 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was prepared on sample 2065612004 in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike and matrix spike duplicate identified as 2166228 and 2166229 were prepared and analyzed on sample 2065612004 (MRC-MW-DUP01-041615), in this deliverable group. All MS/MSD recoveries and their associated RPDs were within method control limits, except the following;

- The iron analyte concentration in the sample were greater than four times the concentration of our spiking solution. For this reason, spike recoveries were not calculated (NSC).

Total Mercury in Water by EPA Method 7470A

Sample handling. Six (6) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2065612006 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DJM

MIDDLETOWN, PA

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE ___

2065612

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-528-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature: [signature]	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Contain...)

PRESERVATIVE: 1 7 0 2

Preservative Key: 0. NONE 1. HCL 2. HNO_3 3. H_2SO_4 4. NaOH 5. Zn. Acetate 6. MeOH 7. $NaHSO_4$ 8. Other ___

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP (VOCs)	GC/MS SVOAs ○ 8270 ○ 625 (1-4 dioxane (5222))	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608 (Perchlorate (6850))	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below) (6020)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
1	MRC-MW-54A-041615		4/16/15	0910	Aq	2	—	1	—	1	—	—	—	
2	MRC-MW-71A-041615			1110	Aq	5	3	1	—	—	—	1	—	
3	MRC-MW-71B-041615			1410		5	3	1	—	—	—	1	—	
4	MRC-MW-DUP01-041615			—		5	3	1	—	—	—	1	—	DUPLICATE
5	TB-041615			—		3	3	—	—	—	—	—	—	
6	MRC-MW-53B-041615			0900		6	3	1	—	1	—	1	—	
7	MRC-MW-53A-041615			1010		6	3	1	—	1	—	1	—	
8	MRC-MW-08A-041615			1220		6	3	1	—	1	—	1	—	

	Y	N	Initials
Custody Seals Present?			✓ LMG
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?		✓	

Cooler Temp: 1 °C

Cooler #:

Therm ID: 291

Ship Carrier

FedEx UPS

DHL ___

Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS

Metals

* Samples go to MIDDLETOWN, PA LAB
* SEE SCOPE FOR ANALYTES LIST
* Ok to run Perchlorate analysis

See QAPP ☐

TURNAROUND REQUIREMENTS

___ RUSH (SURCHARGES APPLY)

___ 1 day ___ 2 day ___ 3 day ___ 4 day ___ 5 day

STANDARD

REQUESTED REPORT DATE

___ I. ...

___ II. ...

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

Edata ___ Yes ___ No

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature:
Printed Name: Josh Mullis	Printed Name: Lawrence Lawson	Printed Name: Lawrence Lawson	Printed Name: Deandre Sassafras	Printed Name: Deandre Sassafras	Printed Name:
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm:
Date/Time: 4/16/15 1515	Date/Time: 4/16/15 1515	Date/Time: 4/16/15 1600	Date/Time: 4/16/15 1600	Date/Time: 4/16/15 2026	Date/Time:

Distribution: White - Lab Copy; Yellow - Return to Originator

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LMG 04/17/15 0447

ALS

Field Duplicate Precision

ANALYTE	MRC-MW-DUP01-041615	MRC-MW-71B-041615	RPD	DIFFERENCE
1,1,1-TRICHLOROETHANE	1.3	1.2	8.00	0.1
1,1,2-TRICHLOROTRIFLUOROETHANE	0.89	0.9	1.12	0.01
1,1-DICHLOROETHANE	4.1	4.1	0.00	0
1,1-DICHLOROETHENE	58.7	58	1.20	0.7
1,2-DICHLOROETHANE	0.47	0.5	6.19	0.03
CIS-1,2-DICHLOROETHENE	6.6	6.7	1.50	0.1
TETRACHLOROETHENE	0.76	0.76	0.00	0
TRICHLOROETHENE	44.5	45.5	2.22	1

Field Duplicate Precision

ANALYTE	MRC-MW-DUP01-041615	MRC-MW-71B-041615	RPD	DIFFERENCE
1,4-DIOXANE	19.4	19.3	0.52	0.1

Field Duplicate Precision

ANALYTE	MRC-MW-DUP01-041615	MRC-MW-71B-041615	RPD	DIFFERENCE
BARIUM	0.041	0.041	0.00	0
CHROMIUM	0.00092	0.00085	7.91	7E-05
COBALT	0.024	0.025	4.08	0.001
IRON	10	10.1	1.00	0.1
MANGANESE	1.2	1.2	0.00	0
NICKEL	0.037	0.037	0.00	0

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511256; 1511257; 1511258; 1211437; 1511439

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1562 (147840)

General Set Information: There were ten field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 444330) was less than 1/2 the CRDL. The recovery for the LCS (444331) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511256001. The percent recoveries were outside of performance limits. The relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APR15C-02/03/11/20.

Thomas Bosch — April 29, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Report Date: April 29, 2015

Debra Musser
ALS Environmental- Middletown
34 Dogwood Lane
Middletown, PA 17057

Phone: 717 944-5541 x 3162

E-mail: Debra.musser@alsglobal.com

Workorder: **34-1511258**
Project ID: 2065612
Purchase Order: 2065612

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
2065612 001	1511258001	04/16/15	04/22/15	
2065612 006	1511258002	04/16/15	04/22/15	
2065612 007	1511258003	04/16/15	04/22/15	
2065612 008	1511258004	04/16/15	04/22/15	

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-017

Lab File ID: 15041700.D BFB Injection Date: 4/17/2015

Instrument ID: ms15.i BFB Injection Time: 09:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.3
175	5.0 - 9.0% of mass 174	5.7 (7.0) 1
176	95.0 - 101.0% of mass 174	77.6 (95.4) 1
177	5.0 - 9.0% of mass 176	5.0 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15041703.D	4/17/2015	10:39
1234	1234	15041704.D	4/17/2015	10:56
1235	1235	15041705.D	4/17/2015	11:13
1236	1236	15041706.D	4/17/2015	11:31
1237	1237	15041707.D	4/17/2015	11:48
1238	1238	15041708.D	4/17/2015	12:05
1239	1239	15041709.D	4/17/2015	12:23
2165640(LCS)	2165640	15041714.D	4/17/2015	13:49

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02150			A		0.025420		13.35269
Acrolein	0.04346	0.04700		A		0.046870		8.87083
Acrylonitrile	0.09374	0.09420		A		0.101720		10.11420
Acetonitrile	0.02968			A		0.036650		13.39134
tert-Amyl Ethylether	4213141	4951		L	0.000000	1.627200		0.99780
tert-Amyl methyl ether	5133616	5851		L	0.000000	1.323550		0.99917
tert-Amyl Alcohol	601293	704		L	0.000000	56.396912		0.99814
Benzene	1.27434	1.10894		A		1.241190		10.58614
Benzyl Chloride				Q	0.000000	0.143690	0.029740	0.99991
Bromobenzene	0.97604	0.74747		A		0.902000		14.84422
Bromochloromethane	0.15243	0.14604		A		0.163350		10.25949
Bromodichloromethane	0.44080	0.33394		A		0.392350		13.81932
Bromoform *	1338355	1232		Q	0.000000	0.435990	0.009530	0.99971
Bromomethane	1075271			L	0.000000	6.218590		0.99848
2-Butanone	0.03713			A		0.037740		12.55237
tert.- Butyl Alcohol	0.02376			A		0.024770		7.01068
tert-Butylbenzene	2073194	1739		L	0.000000	1.297790		0.99982
n-Butylbenzene	2204415			L	0.000000	1.224140		0.99935
sec-Butylbenzene	10720671	7378		L	0.000000	0.250660		0.99977
Carbon Disulfide	0.75980	0.60853		A		0.664000		10.57539
Carbon Tetrachloride	0.40632	0.28418		A		0.362980		13.42907
Chloroacetonitrile	325006			Q	0.000000	0.022800	-0.000010	0.99965
Chlorobenzene *	2.19164	1.87636		A		2.138210		9.16523
1-Chlorobutane	0.30442	0.27544		A		0.301730		10.02872
Chlorodibromomethane	2229887	2646		L	0.000000	1.320690		0.99897
Chloroethane	0.20128			A		0.238640		11.97155
2-Chloroethylvinyl ether	0.14061			A		0.128220		10.02306
Chloroform **	3904606	18104		Q	0.030370	0.575280	0.000060	0.99967
1-Chlorohexane	2878567	2684		L	0.000000	1.022160		0.99867
Chloromethane *	0.42875			A		0.515330		14.85648
Chloroprene	0.41952	0.36738		A		0.407690		10.34581
3-Chloro-1-propene	0.29246	0.30678		A		0.314290		6.84089
o-Chlorotoluene	8134248	7088		L	0.000000	0.331320		0.99982
p-Chlorotoluene	7603192	5801		L	0.000000	0.354900		0.99977
Cyclohexane	2984728	4171		L	0.000000	2.262420		0.99982
1,2-Dibromo-3-Chloropropane	0.14266	0.09901		A		0.128270		11.53273

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.65129	0.54870		A		0.613510		11.23085
Dibromomethane	0.19172	0.18388		A		0.192910		6.75287
trans-1,4-Dichloro-2-butene	635655	649		L	0.000000	4.160080		0.99863
1,2-Dichlorobenzene	1.78231	1.55402		A		1.690540		9.20938
1,3-Dichlorobenzene	1.82595	1.40511		A		1.714790		12.13976
1,4-Dichlorobenzene	1.85978	1.89440		A		1.869510		5.23051
Dichlorodifluoromethane	0.39025			A		0.440580		10.81630
1,1-Dichloroethane *		0.53864		A		0.565720		7.47475
1,2-Dichloroethene, Total	5300341	9644		L	0.000000	2.545260		0.99960
1,2-Dichloroethane	0.40364	0.41141		A		0.430720		8.19580
1,1-Dichloroethene **	0.38202	0.39648		A		0.398900		6.23044
cis-1,2-Dichloroethene	0.41233	0.36831		A		0.404200		8.14800
trans-1,2-Dichloroethene	0.37614	0.37806		A		0.388220		7.20134
Dichlorofluoromethane	0.54189	0.61008		A		0.574180		8.04570
1,1-Dichloro-2-Propanone	207685			L	0.000000	69.396950		0.99911
2,2-Dichloropropane	0.36550	0.30570		A		0.332710		9.13718
1,3-Dichloropropane	1.20820	0.99315		A		1.169770		9.65596
1,2-Dichloropropane **	0.33277	0.29602		A		0.317840		9.42977
1,1-Dichloropropene	0.40589	0.33603		A		0.378320		11.86754
cis-1,3-Dichloropropene	3487668	3447		L	0.000000	0.846900		0.99846
trans-1,3-Dichloropropene	3142276	2943		L	0.000000	0.933700		0.99934
1,3-Dichloropropene, Total	6629944	6390		L	0.000000	0.888180		0.99894
Diisobutylene	4686812	32902		L	0.000000	1.435930		0.99976
Diisopropyl ether	0.83077	0.79937		A		0.844300		8.28498
1,4-Dioxane	0.00340			A		0.003300		12.26198
Ethyl Acetate	0.25207	0.25137		A		0.254670		8.19100
Ethyl ether	0.18507	0.19464		A		0.190110		7.07916
Ethyl Methacrylate	2846887	2359		L	0.000000	1.026370		0.99940
Ethyl tert-butyl ether	5580280	7541		L	0.000000	1.203310		0.99983
Ethylbenzene **	3394435	3836		L	0.000000	0.861550		0.99977
Freon 113	0.25000	0.32164		A		0.273740		9.74960
Heptane	1405405	1707		L	0.000000	4.824340		0.99835
Hexachlorobutadiene	0.47840	0.42810		A		0.431370		10.14694
Hexachloroethane	1598514	1616		L	0.000000	1.713730		0.99725
Hexane	0.47877	0.53586		A		0.483430		5.95882
2-Hexanone	6265115	6303		L	0.000000	2.275700		0.99798

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8816753	4948		L	0.000000	0.305930		0.99972
1,3,5-Trimethylbenzene	8637632	5644		L	0.000000	0.312070		0.99981
Vinyl Acetate	431185	521		L	0.000000	15.534290		0.99979
Vinyl Chloride **	0.36981			A		0.390360		7.18993
o-Xylene	4059055	3537		L	0.000000	0.725160		0.99896
mp-Xylene	8374675	8101		L	0.000000	0.699710		0.99963
4-Bromofluorobenzene		4420		L	0.000000	1.162640		0.99966
Dibromofluoromethane				A		0.336800		13.41450
1,2-Dichloroethane-d4	2270423			L	0.000000	2.961950		0.99888
Toluene-d8				A		2.577610		9.74042

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-017

Lab File ID: 15042100.D BFB Injection Date: 4/21/2015

Instrument ID: ms15.i BFB Injection Time: 09:40

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.0
75	30.0 - 60.0% of mass 95	50.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.5
175	5.0 - 9.0% of mass 174	5.5 (6.9) 1
176	95.0 - 101.0% of mass 174	76.8 (96.6) 1
177	5.0 - 9.0% of mass 176	5.2 (6.8) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042102.D	4/21/2015	10:19
2167095(MB)	2167095	15042105.D	4/21/2015	11:44
2167096(LCS)	2167096	15042106.D	4/21/2015	12:01
TB-041615	2065612005	15042118.D	4/21/2015	15:36
MRC-MW-71B-041615	2065612003	15042129.D	4/21/2015	18:44
MRC-MW-DUP01-041615	2065612004	15042130.D	4/21/2015	19:02
MRC-MW-53B-041615	2065612006	15042131.D	4/21/2015	19:19
MRC-MW-53A-041615	2065612007	15042132.D	4/21/2015	19:36

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0230			-9.4	100.0	A
Acrolein	0.0469	0.0446			-4.8	100.0	A
Acrylonitrile	0.1017	0.0931			-8.5	100.0	A
Acetonitrile	0.0366	0.0308			-15.9	100.0	A
tert-Amyl Ethylether	50.0000		41.8644		-16.3	100.0	L
tert-Amyl methyl ether	50.0000		43.2388		-13.5	100.0	L
tert-Amyl Alcohol	250		186		-25.6	100.0	L
Benzene	1.2412	1.2224			-1.5	100.0	A
Benzyl Chloride	50.0000		48.2603		-3.5	100.0	Q
Bromobenzene	0.9020	0.9001			-0.2	100.0	A
Bromochloromethane	0.1634	0.1605			-1.8	100.0	A
Bromodichloromethane	0.3923	0.3986			1.6	100.0	A
Bromoform	50.0000		43.5899	0.100	-12.8	100.0	Q
Bromomethane	50.0000		53.0635		6.1	100.0	L
2-Butanone	0.0377	0.0341			-9.5	100.0	A
tert.- Butyl Alcohol	0.0248	0.0217			-12.5	100.0	A
tert-Butylbenzene	50.0000		44.8853		-10.2	100.0	L
n-Butylbenzene	50.0000		43.4919		-13.0	100.0	L
sec-Butylbenzene	50.0000		44.8330		-10.3	100.0	L
Carbon Disulfide	0.6640	0.5975			-10.0	100.0	A
Carbon Tetrachloride	0.3630	0.3636			0.2	100.0	A
Chloroacetonitrile	250		214		-14.2	100.0	Q
Chlorobenzene	2.1382	2.0488		0.300	-4.2	100.0	A
1-Chlorobutane	0.3017	0.2930			-2.9	100.0	A
Chlorodibromomethane	50.0000		42.3914		-15.2	100.0	L
Chloroethane	0.2386	0.2209			-7.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0875			-31.7	100.0	A
Chloroform	50.0000		48.7596		-2.5	20.0	Q
1-Chlorohexane	50.0000		41.9029		-16.2	100.0	L
Chloromethane	0.5153	0.4229		0.100	-17.9	100.0	A
Chloroprene	0.4077	0.3937			-3.4	100.0	A
3-Chloro-1-propene	0.3143	0.3053			-2.9	100.0	A
o-Chlorotoluene	50.0000		45.3056		-9.4	100.0	L
p-Chlorotoluene	50.0000		45.4683		-9.1	100.0	L
Cyclohexane	50.0000		42.1614		-15.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1147			-10.5	100.0	A
1,2-Dibromoethane	0.6135	0.5757			-6.2	100.0	A
Dibromomethane	0.1929	0.1823			-5.5	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		46.0130		-8.0	100.0	L
1,2-Dichlorobenzene	1.6905	1.6367			-3.2	100.0	A
1,3-Dichlorobenzene	1.7148	1.6972			-1.0	100.0	A
1,4-Dichlorobenzene	1.8695	1.7464			-6.6	100.0	A
Dichlorodifluoromethane	0.4406	0.3942			-10.5	100.0	A
1,1-Dichloroethane	0.5657	0.5288		0.100	-6.5	100.0	A
1,2-Dichloroethene, Total	100		95.0313		-5.0	100.0	L
1,2-Dichloroethane	0.4307	0.4084			-5.2	100.0	A
1,1-Dichloroethene	0.3989	0.3471			-13.0	20.0	A
cis-1,2-Dichloroethene	0.4042	0.3838			-5.0	100.0	A
trans-1,2-Dichloroethene	0.3882	0.3692			-4.9	100.0	A
Dichlorofluoromethane	0.5742	0.5098			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.3327	0.3268			-1.8	100.0	A
1,3-Dichloropropane	1.1698	1.0944			-6.4	100.0	A
1,2-Dichloropropane	0.3178	0.3094			-2.7	20.0	A
1,1-Dichloropropene	0.3783	0.3693			-2.4	100.0	A
cis-1,3-Dichloropropene	50.0000		42.4608		-15.1	100.0	L
trans-1,3-Dichloropropene	50.0000		43.2612		-13.5	100.0	L
1,3-Dichloropropene, Total	100		85.7220		-14.3	100.0	L
Diisobutylene	50.0000		43.3954		-13.2	100.0	L
Diisopropyl ether	0.8443	0.8358			-1.0	100.0	A
1,4-Dioxane	0.0033	0.0031			-5.0	100.0	A
Ethyl Acetate	0.2547	0.2280			-10.5	100.0	A
Ethyl ether	0.1901	0.1761			-7.4	100.0	A
Ethyl Methacrylate	50.0000		40.4282		-19.1	100.0	L
Ethyl tert-butyl ether	50.0000		45.8917		-8.2	100.0	L
Ethylbenzene	50.0000		45.9680		-8.1	20.0	L
Freon 113	0.2737	0.2218			-19.0	100.0	A
Heptane	50.0000		39.1465		-21.7	100.0	L
Hexachlorobutadiene	0.4314	0.4062			-5.8	100.0	A
Hexachloroethane	50.0000		41.8275		-16.3	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.4111			-15.0	100.0	A
2-Hexanone	250		218		-12.6	100.0	L
Iodomethane	50.0000		57.9310		15.9	100.0	Q
Isobutyl alcohol	500		400		-20.0	100.0	L
Isopropyl Alcohol	0.0167	0.0146			-12.6	100.0	A
Isopropylbenzene	50.0000		43.8811		-12.2	100.0	L
p-Isopropyltoluene	50.0000		43.7795		-12.4	100.0	L
Methyl acetate	0.0545	0.0477			-12.3	100.0	A
Methyl acrylate	50.0000		43.9177		-12.2	100.0	L
Methacrylonitrile	50.0000		47.1026		-5.8	100.0	L
Methyl cyclohexane	1.0036	0.9405			-6.3	100.0	A
Methyl methacrylate	50.0000		41.0593		-17.9	100.0	L
Methyl t-Butyl Ether	0.7715	0.7083			-8.2	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		227		-9.2	100.0	L
Methylene Chloride	50.0000		50.9335		1.9	100.0	Q
Naphthalene	50.0000		42.0605		-15.9	100.0	Q
Nitrobenzene	500		408		-18.5	100.0	Q
2-Nitropropane	250		207		-17.1	100.0	L
Octane	50.0000		41.0501		-17.9	100.0	L
Pentachloroethane	0.6478	0.6290			-2.9	100.0	A
Pentane	0.1681	0.1132			-32.7	100.0	A
n-Propanol	0.0219	0.0208			-5.0	100.0	A
Propionitrile	0.0412	0.0383			-7.0	100.0	A
n-Propylbenzene	50.0000		45.5300		-8.9	100.0	L
Styrene	50.0000		44.9960		-10.0	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.6924			0.1	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.8507		0.300	-12.6	100.0	A
Tetrachloroethene	0.6720	0.6146			-8.5	100.0	A
Tetrahydrofuran	0.0755	0.0697			-7.7	100.0	A
Toluene	50.0000		45.8229		-8.4	20.0	L
Total Xylenes	150		134		-10.9	100.0	L
1,2,3-Trichlorobenzene	50.0000		45.0380		-9.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		42.8390		-14.3	100.0	Q
1,1,1-Trichloroethane	0.4396	0.4268			-2.9	100.0	A
1,1,2-Trichloroethane	0.5936	0.5342			-10.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3137			-5.3	100.0	A
Trichlorofluoromethane	0.5623	0.5087			-9.5	100.0	A
1,2,3-Trichloropropane	0.3120	0.2663			-14.7	100.0	A
1,2,4-Trimethylbenzene	50.0000		45.2897		-9.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0313		-7.9	100.0	L
Vinyl Acetate	50.0000		45.9016		-8.2	100.0	L
Vinyl Chloride	0.3904	0.3423			-12.3	20.0	A
o-Xylene	50.0000		42.8491		-14.3	100.0	L
mp-Xylene	100		90.8207		-9.2	100.0	L
4-Bromofluorobenzene	50.0000		44.5845		-10.8	100.0	L
Dibromofluoromethane	0.3368	0.2843			-15.6	100.0	A
1,2-Dichloroethane-d4	50.0000		46.4530		-7.1	100.0	L
Toluene-d8	2.5776	2.3032			-10.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2167095

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-017

Lab File ID: 15042105.D Lab Sample ID: 2167095

Date Analyzed: 4/21/2015 Time Analyzed: 11:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2167096(LCS)	2167096	15042106.D	12:01
TB-041615	2065612005	15042118.D	15:36
MRC-MW-71B-041615	2065612003	15042129.D	18:44
MRC-MW-DUP01-041615	2065612004	15042130.D	19:02
MRC-MW-53B-041615	2065612006	15042131.D	19:19
MRC-MW-53A-041615	2065612007	15042132.D	19:36

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.67	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-017

Lab File ID: 15042300.D BFB Injection Date: 4/23/2015

Instrument ID: ms15.i BFB Injection Time: 09:51

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.3
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	77.8
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	74.8 (96.1) 1
177	5.0 - 9.0% of mass 176	4.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042302.D	4/23/2015	11:17
2168253(MB)	2168253	15042305.D	4/23/2015	12:33
2168254(LCS)	2168254	15042306.D	4/23/2015	12:51
MRC-MW-71A-041615	2065612002	15042311.D	4/23/2015	14:19
MRC-MW-08A-041615	2065612008	15042312.D	4/23/2015	14:36
MRC-MW-53B-041615-DL5	2065612006	15042314.D	4/23/2015	15:10

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0239			-6.1	100.0	A
Acrolein	0.0469	0.0480			2.4	100.0	A
Acrylonitrile	0.1017	0.1029			1.2	100.0	A
Acetonitrile	0.0366	0.0330			-9.9	100.0	A
tert-Amyl Ethylether	50.0000		49.6704		-0.7	100.0	L
tert-Amyl methyl ether	50.0000		48.6696		-2.7	100.0	L
tert-Amyl Alcohol	250		192		-23.2	100.0	L
Benzene	1.2412	1.4017			12.9	100.0	A
Benzyl Chloride	50.0000		53.7271		7.5	100.0	Q
Bromobenzene	0.9020	1.0364			14.9	100.0	A
Bromochloromethane	0.1634	0.1771			8.4	100.0	A
Bromodichloromethane	0.3923	0.4460			13.7	100.0	A
Bromoform	50.0000		46.2155	0.100	-7.6	100.0	Q
Bromomethane	50.0000		66.9949		34.0	100.0	L
2-Butanone	0.0377	0.0315			-16.7	100.0	A
tert.- Butyl Alcohol	0.0248	0.0228			-8.1	100.0	A
tert-Butylbenzene	50.0000		53.4198		6.8	100.0	L
n-Butylbenzene	50.0000		54.1976		8.4	100.0	L
sec-Butylbenzene	50.0000		54.1201		8.2	100.0	L
Carbon Disulfide	0.6640	0.8077			21.6	100.0	A
Carbon Tetrachloride	0.3630	0.4237			16.7	100.0	A
Chloroacetonitrile	250		227		-9.1	100.0	Q
Chlorobenzene	2.1382	2.3641		0.300	10.6	100.0	A
1-Chlorobutane	0.3017	0.3414			13.2	100.0	A
Chlorodibromomethane	50.0000		46.6616		-6.7	100.0	L
Chloroethane	0.2386	0.2777			16.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0769			-40.1	100.0	A
Chloroform	50.0000		55.2796		10.6	20.0	Q
1-Chlorohexane	50.0000		51.9047		3.8	100.0	L
Chloromethane	0.5153	0.5281		0.100	2.5	100.0	A
Chloroprene	0.4077	0.4777			17.2	100.0	A
3-Chloro-1-propene	0.3143	0.4022			28.0	100.0	A
o-Chlorotoluene	50.0000		53.3696		6.7	100.0	L
p-Chlorotoluene	50.0000		53.7630		7.5	100.0	L
Cyclohexane	50.0000		53.8627		7.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1216			-5.2	100.0	A
1,2-Dibromoethane	0.6135	0.6351			3.5	100.0	A
Dibromomethane	0.1929	0.2000			3.7	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		48.1595		-3.7	100.0	L
1,2-Dichlorobenzene	1.6905	1.8718			10.7	100.0	A
1,3-Dichlorobenzene	1.7148	2.0030			16.8	100.0	A
1,4-Dichlorobenzene	1.8695	2.0376			9.0	100.0	A
Dichlorodifluoromethane	0.4406	0.5551			26.0	100.0	A
1,1-Dichloroethane	0.5657	0.6239		0.100	10.3	100.0	A
1,2-Dichloroethene, Total	100		114		13.8	100.0	L
1,2-Dichloroethane	0.4307	0.4435			3.0	100.0	A
1,1-Dichloroethene	0.3989	0.4351			9.1	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4510			11.6	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4502			16.0	100.0	A
Dichlorofluoromethane	0.5742	0.6201			8.0	100.0	A
1,1-Dichloro-2-Propanone	250		214		-14.4	100.0	L
2,2-Dichloropropane	0.3327	0.4180			25.6	100.0	A
1,3-Dichloropropane	1.1698	1.2213			4.4	100.0	A
1,2-Dichloropropane	0.3178	0.3513			10.5	20.0	A
1,1-Dichloropropene	0.3783	0.4353			15.1	100.0	A
cis-1,3-Dichloropropene	50.0000		49.5108		-1.0	100.0	L
trans-1,3-Dichloropropene	50.0000		49.4206		-1.2	100.0	L
1,3-Dichloropropene, Total	100		98.9314		-1.1	100.0	L
Diisobutylene	50.0000		56.5816		13.2	100.0	L
Diisopropyl ether	0.8443	0.9826			16.4	100.0	A
1,4-Dioxane	0.0033	0.0033			-1.3	100.0	A
Ethyl Acetate	0.2547	0.2417			-5.1	100.0	A
Ethyl ether	0.1901	0.1998			5.1	100.0	A
Ethyl Methacrylate	50.0000		44.9097		-10.2	100.0	L
Ethyl tert-butyl ether	50.0000		52.4469		4.9	100.0	L
Ethylbenzene	50.0000		53.5247		7.0	20.0	L
Freon 113	0.2737	0.2931			7.1	100.0	A
Heptane	50.0000		59.9886		20.0	100.0	L
Hexachlorobutadiene	0.4314	0.5619			30.2	100.0	A
Hexachloroethane	50.0000		48.7170		-2.6	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.5697			17.8	100.0	A
2-Hexanone	250		231		-7.4	100.0	L
Iodomethane	50.0000		77.3056		54.6	100.0	Q
Isobutyl alcohol	500		535		7.1	100.0	L
Isopropyl Alcohol	0.0167	0.0153			-8.8	100.0	A
Isopropylbenzene	50.0000		51.8856		3.8	100.0	L
p-Isopropyltoluene	50.0000		53.4014		6.8	100.0	L
Methyl acetate	0.0545	0.0493			-9.4	100.0	A
Methyl acrylate	50.0000		46.8987		-6.2	100.0	L
Methacrylonitrile	50.0000		49.4612		-1.1	100.0	L
Methyl cyclohexane	1.0036	1.2165			21.2	100.0	A
Methyl methacrylate	50.0000		44.9346		-10.1	100.0	L
Methyl t-Butyl Ether	0.7715	0.7911			2.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		242		-3.1	100.0	L
Methylene Chloride	50.0000		59.9564		19.9	100.0	Q
Naphthalene	50.0000		45.7422		-8.5	100.0	Q
Nitrobenzene	500		426		-14.8	100.0	Q
2-Nitropropane	250		222		-11.1	100.0	L
Octane	50.0000		69.6782		39.4	100.0	L
Pentachloroethane	0.6478	0.7077			9.2	100.0	A
Pentane	0.1681	0.1955			16.3	100.0	A
n-Propanol	0.0219	0.0217			-1.1	100.0	A
Propionitrile	0.0412	0.0384			-7.0	100.0	A
n-Propylbenzene	50.0000		53.7839		7.6	100.0	L
Styrene	50.0000		52.3186		4.6	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7776			12.4	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.9022		0.300	-7.3	100.0	A
Tetrachloroethene	0.6720	0.7333			9.1	100.0	A
Tetrahydrofuran	0.0755	0.0715			-5.4	100.0	A
Toluene	50.0000		53.7037		7.4	20.0	L
Total Xylenes	150		157		4.7	100.0	L
1,2,3-Trichlorobenzene	50.0000		50.4410		0.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		51.2571		2.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.5003			13.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5872			-1.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3685			11.3	100.0	A
Trichlorofluoromethane	0.5623	0.6239			11.0	100.0	A
1,2,3-Trichloropropane	0.3120	0.2846			-8.8	100.0	A
1,2,4-Trimethylbenzene	50.0000		53.0436		6.1	100.0	L
1,3,5-Trimethylbenzene	50.0000		54.0407		8.1	100.0	L
Vinyl Acetate	50.0000		51.8072		3.6	100.0	L
Vinyl Chloride	0.3904	0.4539			16.3	20.0	A
o-Xylene	50.0000		50.8720		1.7	100.0	L
mp-Xylene	100		106		6.3	100.0	L
4-Bromofluorobenzene	50.0000		44.4466		-11.1	100.0	L
Dibromofluoromethane	0.3368	0.2774			-17.6	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8549		-10.3	100.0	L
Toluene-d8	2.5776	2.3218			-9.9	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168253

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-017

Lab File ID: 15042305.D Lab Sample ID: 2168253

Date Analyzed: 4/23/2015 Time Analyzed: 12:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168254(LCS)	2168254	15042306.D	12:51
MRC-MW-71A-041615	2065612002	15042311.D	14:19
MRC-MW-08A-041615	2065612008	15042312.D	14:36
MRC-MW-53B-041615-DL5	2065612006	15042314.D	15:10

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.62	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-017

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2167095(MB)	85.2	87.2	101	98.3	0
03	2167096(LCS)	84.0	81.6	92.4	84.2	0
04	TB-041615	88.1	87.4	104	95.0	0
05	MRC-MW-71B-041615	90.5	87.9	105	95.0	0
06	MRC-MW-DUP01-041615	88.2	88.3	105	96.1	0
07	MRC-MW-53B-041615	89.5	88.0	105	97.9	0
08	MRC-MW-53A-041615	89.6	88.1	106	96.9	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-017

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
09	2168253(MB)	88.2	87.7	104	94.9	0
10	2168254(LCS)	85.0	84.1	95.4	87.1	0
11	MRC-MW-71A-041615	88.7	92.4	110	99.8	0
12	MRC-MW-08A-041615	90.2	94.2	113	100	0
13	MRC-MW-53B-041615-DL5	86.9	88.6	106	94.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		96.5	96.5	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.2	106	(73-117)
Bromodichloromethane	20.0		20.3	101	(79-126)
Bromoform	20.0		17.1	85.5	(70-123)
Bromomethane	20.0		19.9	99.5	(45-148)
2-Butanone	100		102	102	(50-152)
Carbon Disulfide	20.0		20.9	105	(57-131)
Carbon Tetrachloride	20.0		21.3	106	(62-132)
Chlorobenzene	20.0		20.5	103	(85-117)
Chlorodibromomethane	20.0		17.0	84.9	(77-122)
Chloroethane	20.0		16.7	83.6	(51-142)
Chloroform	20.0		21.0	105	(78-122)
Chloromethane	20.0		19.2	96.2	(38-156)
Cyclohexane	20.0		20.7	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.3	91.6	(59-133)
1,2-Dibromoethane	20.0		20.3	101	(80-124)
1,2-Dichlorobenzene	20.0		19.9	99.4	(82-118)
1,3-Dichlorobenzene	20.0		21.1	105	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.5	(81-116)
Dichlorodifluoromethane	20.0		18.2	91.1	(17-166)
1,1-Dichloroethane	20.0		20.5	103	(78-124)
1,2-Dichloroethane	20.0		20.9	104	(70-133)
1,1-Dichloroethene	20.0		21.6	108	(63-128)
cis-1,2-Dichloroethene	20.0		21.2	106	(78-125)
trans-1,2-Dichloroethen	20.0		22.0	110	(71-122)
1,2-Dichloropropane	20.0		20.7	103	(81-127)
cis-1,3-Dichloropropene	20.0		16.7	83.3	(81-121)
trans-1,3-Dichloroprope	20.0		17.7	88.4	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		502	100	(1-280)
Ethylbenzene	20.0		19.0	94.9	(80-124)
Freon 113	20.0		21.2	106	(50-130)
2-Hexanone	100		93.0	93	(65-154)
Isopropylbenzene	20.0		17.3	86.4	(73-129)
Methyl acetate	20.0		20.6	103	(70-130)
Methyl cyclohexane	20.0		21.8	109	(70-130)
Methyl t-Butyl Ether	20.0		19.6	97.9	(69-115)
4-Methyl-2-Pentanone(MI	100		97.8	97.8	(71-146)
Methylene Chloride	20.0		22.0	110	(76-121)
Styrene	20.0		18.0	90	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.5	102	(72-124)
Toluene	20.0		19.5	97.3	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.6	83	(67-123)
1,1,1-Trichloroethane	20.0		21.5	108	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.1	(82-126)
Trichloroethene	20.0		21.2	106	(77-124)
Trichlorofluoromethane	20.0		18.6	92.8	(38-123)
Vinyl Chloride	20.0		19.3	96.6	(27-138)
o-Xylene	20.0		17.0	84.9	(79-124)
mp-Xylene	40.0		37.5	93.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		106	106	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.3	106	(73-117)
Bromodichloromethane	20.0		20.6	103	(79-126)
Bromoform	20.0		17.0	85.2	(70-123)
Bromomethane	20.0		24.5	123	(45-148)
2-Butanone	100		99.5	99.5	(50-152)
Carbon Disulfide	20.0		21.2	106	(57-131)
Carbon Tetrachloride	20.0		21.6	108	(62-132)
Chlorobenzene	20.0		20.6	103	(85-117)
Chlorodibromomethane	20.0		16.8	84.1	(77-122)
Chloroethane	20.0		19.2	96.2	(51-142)
Chloroform	20.0		21.4	107	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		20.8	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.6	93	(59-133)
1,2-Dibromoethane	20.0		19.8	98.8	(80-124)
1,2-Dichlorobenzene	20.0		20.6	103	(82-118)
1,3-Dichlorobenzene	20.0		21.5	107	(81-118)
1,4-Dichlorobenzene	20.0		20.3	102	(81-116)
Dichlorodifluoromethane	20.0		20.8	104	(17-166)
1,1-Dichloroethane	20.0		20.6	103	(78-124)
1,2-Dichloroethane	20.0		21.1	105	(70-133)
1,1-Dichloroethene	20.0		22.7	113	(63-128)
cis-1,2-Dichloroethene	20.0		20.8	104	(78-125)
trans-1,2-Dichloroethen	20.0		22.8	114	(71-122)
1,2-Dichloropropane	20.0		21.2	106	(81-127)
cis-1,3-Dichloropropene	20.0		16.2	80.9*	(81-121)
trans-1,3-Dichloroprope	20.0		17.2	85.9	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		464	92.8	(1-280)
Ethylbenzene	20.0		19.0	95.1	(80-124)
Freon 113	20.0		22.4	112	(50-130)
2-Hexanone	100		85.1	85.1	(65-154)
Isopropylbenzene	20.0		17.4	86.8	(73-129)
Methyl acetate	20.0		19.5	97.3	(70-130)
Methyl cyclohexane	20.0		20.8	104	(70-130)
Methyl t-Butyl Ether	20.0		19.4	97	(69-115)
4-Methyl-2-Pentanone(MI	100		91.4	91.4	(71-146)
Methylene Chloride	20.0		23.4	117	(76-121)
Styrene	20.0		18.1	90.4	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.8	104	(72-124)
Toluene	20.0		19.1	95.5	(80-125)
1,2,3-Trichlorobenzene	20.0		17.5	87.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.2	81.2	(67-123)
1,1,1-Trichloroethane	20.0		21.6	108	(66-130)
1,1,2-Trichloroethane	20.0		19.3	96.5	(82-126)
Trichloroethene	20.0		21.1	106	(77-124)
Trichlorofluoromethane	20.0		19.9	99.4	(38-123)
Vinyl Chloride	20.0		20.0	100	(27-138)
o-Xylene	20.0		16.0	80.2	(79-124)
mp-Xylene	40.0		37.1	92.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		110	110	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.5	112	(73-117)
Bromodichloromethane	20.0		21.6	108	(79-126)
Bromoform	20.0		16.9	84.5	(70-123)
Bromomethane	20.0		27.2	136	(45-148)
2-Butanone	100		98.9	98.9	(50-152)
Carbon Disulfide	20.0		24.0	120	(57-131)
Carbon Tetrachloride	20.0		23.2	116	(62-132)
Chlorobenzene	20.0		21.5	108	(85-117)
Chlorodibromomethane	20.0		17.1	85.3	(77-122)
Chloroethane	20.0		21.9	109	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		20.8	104	(38-156)
Cyclohexane	20.0		22.4	112	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.4	92.2	(59-133)
1,2-Dibromoethane	20.0		20.2	101	(80-124)
1,2-Dichlorobenzene	20.0		21.2	106	(82-118)
1,3-Dichlorobenzene	20.0		22.3	112	(81-118)
1,4-Dichlorobenzene	20.0		21.1	106	(81-116)
Dichlorodifluoromethane	20.0		20.9	105	(17-166)
1,1-Dichloroethane	20.0		23.5	117	(78-124)
1,2-Dichloroethane	20.0		22.1	110	(70-133)
1,1-Dichloroethene	20.0		24.8	124	(63-128)
cis-1,2-Dichloroethene	20.0		22.9	115	(78-125)
trans-1,2-Dichloroethen	20.0		26.0	130*	(71-122)
1,2-Dichloropropane	20.0		22.3	111	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.5	(81-121)
trans-1,3-Dichloroprope	20.0		17.8	89.2	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		475	95	(1-280)
Ethylbenzene	20.0		20.3	102	(80-124)
Freon 113	20.0		23.8	119	(50-130)
2-Hexanone	100		87.9	87.9	(65-154)
Isopropylbenzene	20.0		18.4	92.1	(73-129)
Methyl acetate	20.0		21.5	108	(70-130)
Methyl cyclohexane	20.0		22.5	112	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		94.8	94.8	(71-146)
Methylene Chloride	20.0		25.7	129*	(76-121)
Styrene	20.0		19.2	96	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.7	98.6	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.5	103	(80-125)
1,2,3-Trichlorobenzene	20.0		17.6	88.1	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		23.5	117	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.4	(82-126)
Trichloroethene	20.0		23.3	116	(77-124)
Trichlorofluoromethane	20.0		20.8	104	(38-123)
Vinyl Chloride	20.0		21.5	107	(27-138)
o-Xylene	20.0		16.9	84.4	(79-124)
mp-Xylene	40.0		39.6	98.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Lab File ID: 15041707.D Date Analyzed: 4/17/2015

Instrument ID: ms15.i Time Analyzed: 11:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	393536	5.913	362552	7.686	921216	3.910
UPPER LIMIT	787072	6.413	725104	8.186	1842432	4.410
LOWER LIMIT	196768	5.413	181276	7.186	460608	3.410
SAMPLE NO.						
2165640(LCS)	389068	5.912	362447	7.686	881867	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Lab File ID: 15042102.D Date Analyzed: 4/21/2015

Instrument ID: ms15.i Time Analyzed: 10:19

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	400238	5.912	370616	7.686	895881	3.910
UPPER LIMIT	800476	6.412	741232	8.186	1791762	4.410
LOWER LIMIT	200119	5.412	185308	7.186	447941	3.410
SAMPLE NO.						
1800	400238	5.912	370616	7.686	895881	3.910
2167095(MB)	279576	5.912	225775	7.686	732635	3.910
2167096(LCS)	375511	5.913	339659	7.686	834965	3.910
TB-041615	282179	5.913	221345	7.686	739168	3.910
MRC-MW-71B-041615	282786	5.912	226769	7.686	724342	3.910
MRC-MW-DUP01-0416	283096	5.912	224860	7.686	734727	3.910
MRC-MW-53B-041615	284723	5.912	225809	7.686	745796	3.910
MRC-MW-53A-041615	278478	5.913	223099	7.686	734889	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Lab File ID: 15042302.D Date Analyzed: 4/23/2015

Instrument ID: ms15.i Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	390234	5.912	359420	7.680	891295	3.910
UPPER LIMIT	780468	6.412	718840	8.180	1782590	4.410
LOWER LIMIT	195117	5.412	179710	7.180	445648	3.410
SAMPLE NO.						
1800	390234	5.912	359420	7.680	891295	3.910
2168253(MB)	297853	5.913	231105	7.686	726287	3.910
2168254(LCS)	365551	5.913	329106	7.686	807783	3.910
MRC-MW-71A-041615	264963	5.912	206223	7.686	673177	3.910
MRC-MW-08A-041615	264315	5.913	212516	7.686	679491	3.910
MRC-MW-53B-041615	276614	5.913	216921	7.686	705838	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 1047

Lab File ID: 12042301 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.39e-003	3.5e-003	1.0178812	0.00001	25.43	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6392250	0.6392250	0.00001	-10.22	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 1611

Lab File ID: 12042314 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.34e-002	5.e-002	1.4685206	0.00001	-13.20	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6390223	0.6390223	0.00001	-10.25	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Lab File ID: 12042302 Lab Sample ID: 2167682

Instrument ID: MS12 Date Extracted: 04/22/15

Matrix: (soil/water) WATER Date Analyzed: 04/23/15

Level:(low/med) LOW Time Analyzed: 1112

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2167683LCSLO	2167683	12042303	04/23/15
02	MRC-MW-54A-0	2065612001	12042315	04/23/15
03	MRC-MW-71A-0	2065612002	12042316	04/23/15
04	MRC-MW-71B-0	2065612003	12042317	04/23/15
05	MRC-MW-DUP01	2065612004	12042318	04/23/15
06	MRC-MW-53B-0	2065612006	12042319	04/23/15
07	MRC-MW-53A-0	2065612007	12042320	04/23/15
08	MRC-MW-08A-0	2065612008	12042321	04/23/15
09				
10				
11				
12				
13				
14				
15				
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25				
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27				
28				
29				
30				

COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Matrix: (soil/water) WATER Lab Sample ID: 2167682

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042302

Level: (low/med) LOW Date Received: 04/22/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2167682	82								0
02	2167683LCSLO	82								0
03	MRC-MW-54A-0	80								0
04	MRC-MW-71A-0	83								0
05	MRC-MW-71B-0	82								0
06	MRC-MW-DUP01	84								0
07	MRC-MW-53B-0	83								0
08	MRC-MW-53A-0	83								0
09	MRC-MW-08A-0	78								0
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

Matrix Spike - Sample No.: 2167683LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0631509	90	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042301 Time Analyzed: 1047

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	50167	6.35				
	UPPER LIMIT	65217	6.85				
	LOWER LIMIT	35117	5.85				
	SAMPLE NO.						
01	2167682	52174	6.36				
02	2167683LCSLO	52734	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042314 Time Analyzed: 1611

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	51222	6.35				
	UPPER LIMIT	66589	6.85				
	LOWER LIMIT	35855	5.85				
	SAMPLE NO.						
01	MRC-MW-54A-0	51400	6.36				
02	MRC-MW-71A-0	50513	6.36				
03	MRC-MW-71B-0	52384	6.36				
04	MRC-MW-DUP01	52089	6.34				
05	MRC-MW-53B-0	52364	6.36				
06	MRC-MW-53A-0	52687	6.36				
07	MRC-MW-08A-0	53061	6.36				
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1800	1800	04/23/15	1047	8.36	
02	2167682	2167682	04/23/15	1112	8.36	
03	2167683LCSLO	2167683	04/23/15	1137	8.38	
04	MIDCHECK-5	MIDCHECK-5	04/23/15	1611	8.36	
05	MRC-MW-54A-0	2065612001	04/23/15	1636	8.36	
06	MRC-MW-71A-0	2065612002	04/23/15	1703	8.36	
07	MRC-MW-71B-0	2065612003	04/23/15	1727	8.36	
08	MRC-MW-DUP01	2065612004	04/23/15	1754	8.36	
09	MRC-MW-53B-0	2065612006	04/23/15	1820	8.36	
10	MRC-MW-53A-0	2065612007	04/23/15	1847	8.36	
11	MRC-MW-08A-0	2065612008	04/23/15	1913	8.36	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM017

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2350																										
BLK	1.00	2353			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2357			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0001			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0004			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0008			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0011			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0015			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0018																										
ICB2	1.00	0022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0026			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0029			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0033			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0047																										
ZZZZZZ	1.00	0052																										
ZZZZZZ	1.00	0056																										
ZZZZZZ	1.00	0059																										
2166237	1.00	0103			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2166238	1.00	0106			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0110																										
ZZZZZZ	1.00	0113																										
ZZZZZZ	1.00	0117																										
ZZZZZZ	1.00	0121																										
ZZZZZZ	1.00	0124																										
ZZZZZZ	1.00	0128																										
CCV1	1.00	0132			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0135			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0139			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
ZZZZZZ	1.00	0150																										
ZZZZZZ	1.00	0153																										
ZZZZZZ	1.00	0157																										
ZZZZZZ	1.00	0201																										
ZZZZZZ	1.00	0204																										
ZZZZZZ	1.00	0208																										

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0211																										
ZZZZZZ	1.00	0215																										
CCV2	1.00	0219			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0222			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0226			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0230																										
ZZZZZZ	1.00	0233																										
ZZZZZZ	1.00	0237																										
ZZZZZZ	1.00	0240																										
ZZZZZZ	1.00	0244																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0251																										
ZZZZZZ	1.00	0255																										
2065612002	1.00	0259			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612003	1.00	0302			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0306																										
CCB3	1.00	0309			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0313			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV4	1.00	0317			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612004	1.00	0320			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612004S	1.00	0324			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612004SD	1.00	0327			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612006	1.00	0331			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612007	1.00	0335			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065612008	1.00	0338			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	0342																										
ZZZZZZ	1.00	0346																										
ZZZZZZ	1.00	0349																										
ZZZZZZ	1.00	0353																										
CCV5	1.00	0356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	0400			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0404			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0407																										
ZZZZZZ	1.00	0411																										
ZZZZZZ	1.00	0415																										
ZZZZZZ	1.00	0418																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
2065612008	10.00	0424															X											
ZZZZZZ	10.00	0427																										
CCV6	1.00	0431			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	0434			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1012	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Arsenic	0.0991	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Barium	0.0983	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Beryllium	0.0987	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cadmium	0.0985	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Chromium	0.1005	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cobalt	0.1001	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Copper	0.1002	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Lead	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Manganese	0.0998	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Molybdenum	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Nickel	0.0952	0.1000	95		90 - 110	M	4/21/2015	00:15	B042115A 2
	Selenium	0.0974	0.1000	97		90 - 110	M	4/21/2015	00:15	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Thallium	0.0977	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Vanadium	0.1016	0.1000	102		90 - 110	M	4/21/2015	00:15	B042115A 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	00:26	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	00:26	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/21/2015	00:26	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Copper	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	00:26	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	00:26	B042115A 2
	Selenium	0.0048	0.0050	96		70 - 130	M	4/21/2015	00:26	B042115A 2
	Silver	0.0021	0.0020	105		70 - 130	M	4/21/2015	00:26	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1007	0.1000	101		90 - 110	M	4/21/2015	01:32	B042115A 2
	Arsenic	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Barium	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Beryllium	0.0925	0.1000	92		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cadmium	0.0977	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Chromium	0.1000	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cobalt	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Copper	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Lead	0.1004	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Manganese	0.0991	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Molybdenum	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Nickel	0.0947	0.1000	95		90 - 110	M	4/21/2015	01:32	B042115A 2
	Selenium	0.0944	0.1000	94		90 - 110	M	4/21/2015	01:32	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Thallium	0.0971	0.1000	97		90 - 110	M	4/21/2015	01:32	B042115A 2
	Vanadium	0.1002	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Copper	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	01:39	B042115A 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Selenium	0.0047	0.0050	94		70 - 130	M	4/21/2015	01:39	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1018	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Arsenic	0.0994	0.1000	99		90 - 110	M	4/21/2015	02:19	B042115A 2
	Barium	0.0984	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Beryllium	0.0965	0.1000	96		90 - 110	M	4/21/2015	02:19	B042115A 2
	Cadmium	0.0989	0.1000	99		90 - 110	M	4/21/2015	02:19	B042115A 2
	Chromium	0.1007	0.1000	101		90 - 110	M	4/21/2015	02:19	B042115A 2
	Cobalt	0.0996	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Copper	0.1001	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Lead	0.1015	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Manganese	0.1012	0.1000	101		90 - 110	M	4/21/2015	02:19	B042115A 2
	Molybdenum	0.1018	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
	Nickel	0.0953	0.1000	95		90 - 110	M	4/21/2015	02:19	B042115A 2
	Selenium	0.0979	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Silver	0.0998	0.1000	100		90 - 110	M	4/21/2015	02:19	B042115A 2
	Thallium	0.0979	0.1000	98		90 - 110	M	4/21/2015	02:19	B042115A 2
	Vanadium	0.1015	0.1000	102		90 - 110	M	4/21/2015	02:19	B042115A 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	02:26	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	02:26	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	02:26	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Cobalt	0.0049	0.0050	98		70 - 130	M	4/21/2015	02:26	B042115A 2
	Copper	0.0048	0.0050	96		70 - 130	M	4/21/2015	02:26	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Manganese	0.0050	0.0050	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/21/2015	02:26	B042115A 2
	Nickel	0.0048	0.0050	96		70 - 130	M	4/21/2015	02:26	B042115A 2
	Selenium	0.0046	0.0050	92		70 - 130	M	4/21/2015	02:26	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	02:26	B042115A 2
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/21/2015	02:26	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	03:13	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	03:13	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	03:13	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	03:13	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	03:13	B042115A 2
	Chromium	0.0019	0.0020	95		70 - 130	M	4/21/2015	03:13	B042115A 2
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/21/2015	03:13	B042115A 2
	Copper	0.0047	0.0050	94		70 - 130	M	4/21/2015	03:13	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	03:13	B042115A 2
	Manganese	0.0049	0.0050	98		70 - 130	M	4/21/2015	03:13	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	03:13	B042115A 2
	Nickel	0.0048	0.0050	96		70 - 130	M	4/21/2015	03:13	B042115A 2
	Selenium	0.0046	0.0050	92		70 - 130	M	4/21/2015	03:13	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	03:13	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	03:13	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	03:13	B042115A 2
CCV										
	Antimony	0.1059	0.1000	106		90 - 110	M	4/21/2015	03:17	B042115A 2
	Arsenic	0.0987	0.1000	99		90 - 110	M	4/21/2015	03:17	B042115A 2
	Barium	0.1016	0.1000	102		90 - 110	M	4/21/2015	03:17	B042115A 2
	Beryllium	0.1007	0.1000	101		90 - 110	M	4/21/2015	03:17	B042115A 2
	Cadmium	0.1026	0.1000	103		90 - 110	M	4/21/2015	03:17	B042115A 2
	Chromium	0.1054	0.1000	105		90 - 110	M	4/21/2015	03:17	B042115A 2
	Cobalt	0.1034	0.1000	103		90 - 110	M	4/21/2015	03:17	B042115A 2
	Copper	0.1052	0.1000	105		90 - 110	M	4/21/2015	03:17	B042115A 2
	Lead	0.1045	0.1000	104		90 - 110	M	4/21/2015	03:17	B042115A 2
	Manganese	0.1049	0.1000	105		90 - 110	M	4/21/2015	03:17	B042115A 2
	Molybdenum	0.1045	0.1000	104		90 - 110	M	4/21/2015	03:17	B042115A 2
	Nickel	0.0989	0.1000	99		90 - 110	M	4/21/2015	03:17	B042115A 2
	Selenium	0.0970	0.1000	97		90 - 110	M	4/21/2015	03:17	B042115A 2
	Silver	0.1042	0.1000	104		90 - 110	M	4/21/2015	03:17	B042115A 2
	Thallium	0.1008	0.1000	101		90 - 110	M	4/21/2015	03:17	B042115A 2
	Vanadium	0.1052	0.1000	105		90 - 110	M	4/21/2015	03:17	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0974	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Arsenic	0.0980	0.1000	98		90 - 110	M	4/21/2015	03:56	B042115A 2
	Barium	0.0945	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Beryllium	0.0914	0.1000	91		90 - 110	M	4/21/2015	03:56	B042115A 2
	Cadmium	0.0940	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Chromium	0.0971	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Cobalt	0.0957	0.1000	96		90 - 110	M	4/21/2015	03:56	B042115A 2
	Copper	0.0967	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Lead	0.0969	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Manganese	0.0969	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Molybdenum	0.0971	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Nickel	0.0912	0.1000	91		90 - 110	M	4/21/2015	03:56	B042115A 2
	Selenium	0.0944	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Silver	0.0961	0.1000	96		90 - 110	M	4/21/2015	03:56	B042115A 2
	Thallium	0.0940	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Vanadium	0.0978	0.1000	98		90 - 110	M	4/21/2015	03:56	B042115A 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	04:04	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:04	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	04:04	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Chromium	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:04	B042115A 2
	Copper	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:04	B042115A 2
	Lead	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	04:04	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Nickel	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:04	B042115A 2
	Selenium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:04	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0991	0.1000	99		90 - 110	M	4/21/2015	04:31	B042115A 2
	Arsenic	0.1084	0.1000	108		90 - 110	M	4/21/2015	04:31	B042115A 2
	Barium	0.0961	0.1000	96		90 - 110	M	4/21/2015	04:31	B042115A 2
	Beryllium	0.0924	0.1000	92		90 - 110	M	4/21/2015	04:31	B042115A 2
	Cadmium	0.0951	0.1000	95		90 - 110	M	4/21/2015	04:31	B042115A 2
	Chromium	0.0985	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Cobalt	0.0963	0.1000	96		90 - 110	M	4/21/2015	04:31	B042115A 2
	Copper	0.0966	0.1000	97		90 - 110	M	4/21/2015	04:31	B042115A 2
	Lead	0.0998	0.1000	100		90 - 110	M	4/21/2015	04:31	B042115A 2
	Manganese	0.0976	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Molybdenum	0.0985	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Nickel	0.0919	0.1000	92		90 - 110	M	4/21/2015	04:31	B042115A 2
	Selenium	0.1055	0.1000	106		90 - 110	M	4/21/2015	04:31	B042115A 2
	Silver	0.0980	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Thallium	0.0966	0.1000	97		90 - 110	M	4/21/2015	04:31	B042115A 2
	Vanadium	0.0988	0.1000	99		90 - 110	M	4/21/2015	04:31	B042115A 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:38	B042115A 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:38	B042115A 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:38	B042115A 2
	Copper	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:38	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Manganese	0.0050	0.0050	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Nickel	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:38	B042115A 2
	Selenium	0.0055	0.0050	110		70 - 130	M	4/21/2015	04:38	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	00:22	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	00:22	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	00:22	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	00:22	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	00:22	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	01:35	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	01:35	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	01:35	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	01:35	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	01:35	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	02:22	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	02:22	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	02:22	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	02:22	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	02:22	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	02:22	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	02:22	B042115A 235

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	03:09	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	03:09	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	03:09	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	03:09	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	03:09	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	03:09	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	03:09	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	03:09	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	03:09	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	03:09	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	03:09	B042115A 235
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	04:00	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	04:00	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	04:00	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	04:00	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	04:00	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	04:34	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	04:34	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	04:34	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/21/2015	04:34	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	04:34	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166237			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/21/2015	01:03	B042115A 2350
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/21/2015	01:03	B042115A 2350
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/21/2015	01:03	B042115A 2350
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Molybdenum	0.00075	J		0.00556	0.00074	0.00556	M	4/21/2015	01:03	B042115A 2350
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/21/2015	01:03	B042115A 2350
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Arsenic	0.0003				-0.00300 - -0.00300	4/21/2015	00:29	B042115A 23
	Barium	0.0004				-0.01000 - -0.01000	4/21/2015	00:29	B042115A 23
	Beryllium	0.00001				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Cadmium	0.0010				-0.00100 - -0.00100	4/21/2015	00:29	B042115A 23
	Chromium	0.0006				-0.00400 - -0.00400	4/21/2015	00:29	B042115A 23
	Cobalt	0.0006				-0.00600 - -0.00600	4/21/2015	00:29	B042115A 23
	Copper	0.0011				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Lead	0.0001				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Manganese	0.0013				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Molybdenum	1.9387	2.00000	97		80 - 120%	4/21/2015	00:29	B042115A 23
	Nickel	0.0008				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Selenium	0.0000				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Silver	0.0004				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Thallium	0.00002				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Vanadium	0.0002				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Arsenic	0.0204	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Barium	0.0003				-0.00500 - -0.00500	4/21/2015	00:33	B042115A 23
	Beryllium	0.00002				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Cadmium	0.0104	0.01000	104		80 - 120%	4/21/2015	00:33	B042115A 23
	Chromium	0.0196	0.02000	98		80 - 120%	4/21/2015	00:33	B042115A 23
	Cobalt	0.0382	0.04000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Copper	0.0192	0.02000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Lead	0.0002				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Manganese	0.0203	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Molybdenum	2.0480	2.00000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Nickel	0.0353	0.04000	88		80 - 120%	4/21/2015	00:33	B042115A 23
	Selenium	0.0186	0.02000	93		80 - 120%	4/21/2015	00:33	B042115A 23
	Silver	0.0198	0.02000	99		80 - 120%	4/21/2015	00:33	B042115A 23
	Thallium	0.00001				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Vanadium	0.0422	0.04000	106		80 - 120%	4/21/2015	00:33	B042115A 23

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004 **Client ID:** MRC-MW-DUP01-041615S **LIMS ID:** 2166239

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612004S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.217		0.003	U	0.222	98		M
Barium	mg/L	75 - 125	2.276		0.041		2.222	101		M
Beryllium	mg/L	75 - 125	0.22146		0.00100	U	0.22222	100		M
Cadmium	mg/L	75 - 125	0.218		0.000		0.222	98		M
Chromium	mg/L	75 - 125	0.221		0.001		0.222	99		M
Cobalt	mg/L	75 - 125	0.242		0.024		0.222	98		M
Copper	mg/L	75 - 125	0.212		0.006	U	0.222	95		M
Lead	mg/L	75 - 125	0.233		0.002	U	0.222	105		M
Manganese	mg/L	75 - 125	1.409		1.201		0.222	94		M
Molybdenum	mg/L	75 - 125	0.231		0.001		0.222	104		M
Nickel	mg/L	75 - 125	0.249		0.037		0.222	95		M
Selenium	mg/L	75 - 125	0.200		0.006	U	0.222	90		M
Silver	mg/L	75 - 125	0.115		0.002	U	0.111	104		M
Thallium	mg/L	75 - 125	0.2249		0.0010	U	0.2222	101		M
Vanadium	mg/L	75 - 125	0.226		0.001		0.222	101		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004 **Client ID:** MRC-MW-DUP01-041615SD **LIMS ID:** 2166240

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612004SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.217		0.003	U	0.222	98		M
Barium	mg/L	75 - 125	2.280		0.041		2.222	101		M
Beryllium	mg/L	75 - 125	0.21965		0.00100	U	0.22222	99		M
Cadmium	mg/L	75 - 125	0.219		0.000		0.222	99		M
Chromium	mg/L	75 - 125	0.221		0.001		0.222	99		M
Cobalt	mg/L	75 - 125	0.239		0.024		0.222	97		M
Copper	mg/L	75 - 125	0.212		0.006	U	0.222	95		M
Lead	mg/L	75 - 125	0.230		0.002	U	0.222	104		M
Manganese	mg/L	75 - 125	1.408		1.201		0.222	93		M
Molybdenum	mg/L	75 - 125	0.230		0.001		0.222	103		M
Nickel	mg/L	75 - 125	0.248		0.037		0.222	95		M
Selenium	mg/L	75 - 125	0.203		0.006	U	0.222	91		M
Silver	mg/L	75 - 125	0.114		0.002	U	0.111	103		M
Thallium	mg/L	75 - 125	0.2226		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.223		0.001		0.222	100		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004S **Client ID:** MRC-MW-DUP01-041615SD **LIMS ID:** 2166240

Percent Solids for Sample: 0.00 **Duplicate ID:** 2065612004SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.22		0		M
Arsenic	mg/L	0 - 20	0.217		0.217		0		M
Barium	mg/L	0 - 20	2.276		2.280		0		M
Beryllium	mg/L	0 - 20	0.22146		0.21965		1		M
Cadmium	mg/L	0 - 20	0.218		0.219		0		M
Chromium	mg/L	0 - 20	0.221		0.221		0		M
Cobalt	mg/L	0 - 20	0.242		0.239		1		M
Copper	mg/L	0 - 20	0.212		0.212		0		M
Lead	mg/L	0 - 20	0.233		0.230		1		M
Manganese	mg/L	0 - 20	1.409		1.408		0		M
Molybdenum	mg/L	0 - 20	0.231		0.230		0		M
Nickel	mg/L	0 - 20	0.249		0.248		0		M
Selenium	mg/L	0 - 20	0.200		0.203		1		M
Silver	mg/L	0 - 20	0.115		0.114		1		M
Thallium	mg/L	0 - 20	0.2249		0.2226		1		M
Vanadium	mg/L	0 - 20	0.226		0.223		1		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166238									
	Antimony	mg/L	0.2220	0.2314		104		80 - 120	M
	Arsenic	mg/L	0.2220	0.2116		95		80 - 120	M
	Barium	mg/L	2.2220	2.3665		107		80 - 120	M
	Beryllium	mg/L	0.2220	0.2293		103		80 - 120	M
	Cadmium	mg/L	0.2220	0.2303		104		80 - 120	M
	Chromium	mg/L	0.2220	0.2345		106		80 - 120	M
	Cobalt	mg/L	0.2220	0.2327		105		80 - 120	M
	Copper	mg/L	0.2220	0.2280		103		80 - 120	M
	Lead	mg/L	0.2220	0.2396		108		80 - 120	M
	Manganese	mg/L	0.2220	0.2384		107		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2372		107		80 - 120	M
	Nickel	mg/L	0.2220	0.2329		105		80 - 120	M
	Selenium	mg/L	0.2220	0.1958		88		80 - 120	M
	Silver	mg/L	0.1110	0.1224		110		80 - 120	M
	Thallium	mg/L	0.2220	0.2322		105		80 - 120	M
	Vanadium	mg/L	0.2220	0.2367		107		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-017
Contract: TMM017|MRC-GW 2015 **Lab Code:** CAS
Sampling
Method: MS
Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68265						
2166237	MB for HBN 68265 [MDIG/50421	MB	QC-WAT	4/20/15	45.0	50.0	
2166238	LCS for HBN 68265 [MDIG/50421	LCS	QC-WAT	4/20/15	45.0	50.0	
2065612002	MRC-MW-71A-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612003	MRC-MW-71B-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612004	MRC-MW-DUP01-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612004S	MRC-MW-DUP01-041615S	MS	GROUN	4/20/15	45.0	50.0	
2065612004SD	MRC-MW-DUP01-041615SD	MSD	GROUN	4/20/15	45.0	50.0	
2065612006	MRC-MW-53B-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612007	MRC-MW-53A-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612008	MRC-MW-08A-041615	SAM	GROUN	4/20/15	45.0	50.0	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-017

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2350												
BLK	BLK	2353	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2357	99		101		101		99		105		103	
STANDARD 2	STANDARD 2	0001	101		102		103		102		106		103	
STANDARD 3	STANDARD 3	0004	101		101		104		102		102		102	
STANDARD 4	STANDARD 4	0008	100		101		103		101		106		104	
STANDARD 5	STANDARD 5	0011	104		105		106		105		109		105	
ICV	ICV	0015	101		99		103		102		104		102	
ICB1	ZZZZZZ	0018												
ICB2	ICB	0022	101		102		104		101		106		103	
LLICV	LLICV	0026	99		98		101		99		101		101	
ICS-A1	ICSA	0029	94		107		100		103		108		109	
ICS-AB1	ICSAB	0033	101		112		106		110		113		114	
CHECK	ZZZZZZ	0047												
CHECK	ZZZZZZ	0052												
2166233	ZZZZZZ	0056												
2166234	ZZZZZZ	0059												
2166237	MB for HBN 68265	0103	100		112		104		102		103		106	
2166238	LCS for HBN 6826	0106	102		126		106		105		111		113	
2065563001	ZZZZZZ	0110												
2065563002	ZZZZZZ	0113												
2065563003	ZZZZZZ	0117												
2065563004	ZZZZZZ	0121												
2065563005	ZZZZZZ	0124												
2065563006	ZZZZZZ	0128												
CCV1	CCV	0132	108		108		112		110		114		112	
CCB1	CCB	0135	111		116		114		110		116		112	
LLCCV	LLCCV	0139	107		106		110		107		115		109	
2065563007	ZZZZZZ	0142												
2065563008	ZZZZZZ	0146												
2065603006	ZZZZZZ	0150												
2065603007	ZZZZZZ	0153												
2065603008	ZZZZZZ	0157												
2065603009	ZZZZZZ	0201												
2166235	ZZZZZZ	0204												
2166236	ZZZZZZ	0208												
2065603010	ZZZZZZ	0211												
2065429001	ZZZZZZ	0215												
CCV2	CCV	0219	113		110		116		114		118		112	
CCB2	CCB	0222	107		106		109		108		112		109	
LLCCV	LLCCV	0226	113		117		117		114		121		114	
2065429001L	ZZZZZZ	0230												
2065429002	ZZZZZZ	0233												
2065429003	ZZZZZZ	0237												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-017

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2065429004	ZZZZZZ	0240												
2065429005	ZZZZZZ	0244												
2065429006	ZZZZZZ	0248												
2065429007	ZZZZZZ	0251												
2065429008	ZZZZZZ	0255												
2065612002	MRC-MW-71A-04161	0259	107		124		114		115		117		114	
2065612003	MRC-MW-71B-04161	0302	103		109		109		108		108		108	
CCV3	ZZZZZZ	0306												
CCB3	CCB	0309	112		115		115		115		119		114	
LLCCV	LLCCV	0313	114		116		120		117		121		118	
CCV4	CCV	0317	111		110		113		113		118		112	
2065612004	MRC-MW-DUP01-041	0320	102		113		108		107		111		106	
2065612004S	MRC-MW-DUP01-041	0324	107		125		113		113		117		115	
2065612004S	MRC-MW-DUP01-041	0327	108		126		114		114		118		115	
2065612006	MRC-MW-53B-04161	0331	100		110		105		109		110		106	
2065612007	MRC-MW-53A-04161	0335	99		117		104		108		111		109	
2065612008	MRC-MW-08A-04161	0338	98		120		105		110		112		108	
2065723001	ZZZZZZ	0342												
2065723002	ZZZZZZ	0346												
2065723003	ZZZZZZ	0349												
2065723004	ZZZZZZ	0353												
CCV5	CCV	0356	115		113		119		118		124		116	
CCB4	CCB	0400	115		119		118		118		123		116	
LLCCV	LLCCV	0404	118		116		119		119		122		115	
2065723005	ZZZZZZ	0407												
2065944002	ZZZZZZ	0411												
2065944003	ZZZZZZ	0415												
2065944004	ZZZZZZ	0418												
2065612008	MRC-MW-08A-04161	0424	111		115		116		117		122		115	
2065944003	ZZZZZZ	0427												
CCV6	CCV	0431	111		112		115		116		86		103	
CCB5	CCB	0434	111		112		114		114		119		113	
LLCCV	LLCCV	0438	112		112		115		115		120		114	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-017

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2350												
BLK	2353	100											
STANDARD 1	2357	99											
STANDARD 2	0001	102											
STANDARD 3	0004	102											
STANDARD 4	0008	101											
STANDARD 5	0011	106											
ICV	0015	102											
ZZZZZZ	0018												
ICB	0022	102											
LLICV	0026	100											
ICSA	0029	104											
ICSAB	0033	109											
ZZZZZZ	0047												
ZZZZZZ	0052												
ZZZZZZ	0056												
ZZZZZZ	0059												
MB for HBN 68265	0103	104											
LCS for HBN 6826	0106	106											
ZZZZZZ	0110												
ZZZZZZ	0113												
ZZZZZZ	0117												
ZZZZZZ	0121												
ZZZZZZ	0124												
ZZZZZZ	0128												
CCV	0132	109											
CCB	0135	112											
LLCCV	0139	109											
ZZZZZZ	0142												
ZZZZZZ	0146												
ZZZZZZ	0150												
ZZZZZZ	0153												
ZZZZZZ	0157												
ZZZZZZ	0201												
ZZZZZZ	0204												
ZZZZZZ	0208												
ZZZZZZ	0211												
ZZZZZZ	0215												
CCV	0219	114											
CCB	0222	107											
LLCCV	0226	115											
ZZZZZZ	0230												
ZZZZZZ	0233												
ZZZZZZ	0237												
ZZZZZZ	0240												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-017

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0244												
ZZZZZZ	0248												
ZZZZZZ	0251												
ZZZZZZ	0255												
MRC-MW-71A-04161	0259	116											
MRC-MW-71B-04161	0302	109											
ZZZZZZ	0306												
CCB	0309	114											
LLCCV	0313	117											
CCV	0317	112											
MRC-MW-DUP01-041	0320	108											
MRC-MW-DUP01-041	0324	113											
MRC-MW-DUP01-041	0327	115											
MRC-MW-53B-04161	0331	108											
MRC-MW-53A-04161	0335	108											
MRC-MW-08A-04161	0338	109											
ZZZZZZ	0342												
ZZZZZZ	0346												
ZZZZZZ	0349												
ZZZZZZ	0353												
CCV	0356	116											
CCB	0400	118											
LLCCV	0404	118											
ZZZZZZ	0407												
ZZZZZZ	0411												
ZZZZZZ	0415												
ZZZZZZ	0418												
MRC-MW-08A-04161	0424	117											
ZZZZZZ	0427												
CCV	0431	114											
CCB	0434	113											
LLCCV	0438	114											

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042315A 3015

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0846												X													
ICAL2	1.00	0849												X													
ICAL3	1.00	0852												X													
ICAL4	1.00	0855												X													
ICAL5	1.00	0858												X													
ICV1	1.00	0901												X													
ICB1	1.00	0904												X													
CRDL1	1.00	0907												X													
CCV1	1.00	0911												X													
HIGH	1.00	0913												X													
ICS-A1	1.00	0916												X													
ICS-AB1	1.00	0919												X													
ZZZZZZ	1.00	0938																									
ZZZZZZ	1.00	0941																									
2166226	1.00	0944												X													
2166227	1.00	0947												X													
ZZZZZZ	1.00	0950																									
ZZZZZZ	1.00	0954																									
ZZZZZZ	5.00	0957																									
ZZZZZZ	5.00	1000																									
ZZZZZZ	5.00	1003																									
ZZZZZZ	5.00	1006																									
CCV2	1.00	1009												X													
CCB1	1.00	1012												X													
ZZZZZZ	5.00	1015																									
ZZZZZZ	5.00	1018																									
ZZZZZZ	10.00	1022																									
ZZZZZZ	20.00	1025																									
ZZZZZZ	10.00	1028																									
2065612002	1.00	1031												X													
2065612003	1.00	1034												X													
2065612004	1.00	1037												X													
2065612004S	1.00	1041												X													
2065612004SD	1.00	1044												X													
CCV3	1.00	1047												X													
CCB2	1.00	1049												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042315A 3015

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2065612006	1.00	1053												X												
2065612007	1.00	1056												X												
2065612008	1.00	1059												X												
ZZZZZZ	1.00	1102																								
ZZZZZZ	1.00	1105																								
ZZZZZZ	1.00	1109																								
ZZZZZZ	1.00	1112																								
ZZZZZZ	1.00	1115																								
ZZZZZZ	1.00	1118																								
ZZZZZZ	1.00	1121																								
CCV4	1.00	1124												X												
CCB3	1.00	1127												X												
ZZZZZZ	1.00	1130																								
ZZZZZZ	1.00	1134																								
ZZZZZZ	1.00	1137																								
ZZZZZZ	1.00	1140																								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1146																								
ZZZZZZ	1.00	1149																								
ZZZZZZ	1.00	1152																								
ZZZZZZ	1.00	1156																								
ZZZZZZ	1.00	1159																								
CCV5	1.00	1202												X												
CCB4	1.00	1205												X												
LLCCV	1.00	1208												X												
ZZZZZZ	1.00	1211																								
ICS-AB2	1.00	1214												X												
ICS-A3	1.00	1218												X												
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1232																								
ZZZZZZ	1.00	1235																								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1250																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042315A 3015

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1309																								
ZZZZZZ	1.00	1312																								
ZZZZZZ	1.00	1315																								
ZZZZZZ	1.00	1318																								
ZZZZZZ	1.00	1321																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1328																								
ZZZZZZ	1.00	1331																								
ZZZZZZ	1.00	1334																								
ZZZZZZ	1.00	1337																								
ZZZZZZ	1.00	1340																								
ZZZZZZ	1.00	1343																								
ZZZZZZ	1.00	1347																								
ZZZZZZ	1.00	1350																								
ZZZZZZ	1.00	1353																								
ZZZZZZ	1.00	1356																								
ZZZZZZ	1.00	1359																								
ZZZZZZ	100.00	1402																								
ZZZZZZ	20.00	1406																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1421																								
ZZZZZZ	1.00	1424																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1447																								
ZZZZZZ	1.00	1450																								
ZZZZZZ	1.00	1454																								
ZZZZZZ	1.00	1458																								
ZZZZZZ	1.00	1501																								
ZZZZZZ	1.00	1504																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042315A 3015

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1507																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1513																								
ZZZZZZ	1.00	1516																								
ZZZZZZ	1.00	1520																								
ZZZZZZ	1.00	1523																								
ZZZZZZ	1.00	1526																								
ZZZZZZ	1.00	1529																								
ZZZZZZ	1.00	1532																								
ZZZZZZ	1.00	1535																								
ZZZZZZ	1.00	1538																								
ZZZZZZ	1.00	1541																								
ZZZZZZ	1.00	1548																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1557																								
ZZZZZZ	1.00	1600																								

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.971	1.000	97		90 - 110	P	4/23/2015	09:01	042315A 30
CCV	Iron	2.475	2.500	99		90 - 110	P	4/23/2015	09:11	042315A 30
CCV	Iron	2.614	2.500	105		90 - 110	P	4/23/2015	10:09	042315A 30
CCV	Iron	2.636	2.500	105		90 - 110	P	4/23/2015	10:47	042315A 30
CCV	Iron	2.572	2.500	103		90 - 110	P	4/23/2015	11:24	042315A 30
CCV	Iron	2.633	2.500	105		90 - 110	P	4/23/2015	12:02	042315A 30
LLCCV	Iron	0.065	0.060	108		70 - 130	P	4/23/2015	12:08	042315A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.060	0.060	100		70 - 130	P	4/23/2015	09:07	042315A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/23/2015	09:04	042315A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/23/2015	10:12	042315A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/23/2015	10:49	042315A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/23/2015	11:27	042315A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/23/2015	12:05	042315A 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166226			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/23/2015	09:44	042315A 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	109.5	125.0	88		80 - 120%	4/23/2015	09:16	042315A 3015
ICSAB									
	Iron	114.4	125.0	92		80 - 120%	4/23/2015	09:19	042315A 3015
ICSAB									
	Iron	124.3	125.0	99		80 - 120%	4/23/2015	12:14	042315A 3015
ICSA									
	Iron	124.8	125.0	100		80 - 120%	4/23/2015	12:18	042315A 3015

6010C 3015

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004 **Client ID:** MRC-MW-DUP01-041615S **LIMS ID:** 2166228

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612004S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	11.689		10.016		1.111	NSC		P

6010C 3015

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004 **Client ID:** MRC-MW-DUP01-041615SD **LIMS ID:** 2166229

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612004SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	11.069		10.016		1.111	NSC		P

6010C 3015
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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612004S **Client ID:** MRC-MW-DUP01-041615SD **LIMS ID:** 2166229

Percent Solids for Sample: 0.00 **Duplicate ID:** 2065612004SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	mg/L	0 - 20	11.689		11.069		5.4		P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166227									
	Iron	mg/L	1.11	1.280		115		80 - 120	P

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sa **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-017
Contract: TMM017|MRC-GW 2015 **Lab Code:** CAS
Sampling
Method: P
Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68262						
2166226	MB for HBN 68262 [MDIG/50419	MB	QC-WAT	4/20/15	45.0	50.0	
2166227	LCS for HBN 68262 [MDIG/50419	LCS	QC-WAT	4/20/15	45.0	50.0	
2065612002	MRC-MW-71A-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612003	MRC-MW-71B-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612004	MRC-MW-DUP01-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612004S	MRC-MW-DUP01-041615S	MS	GROUN	4/20/15	45.0	50.0	
2065612004SD	MRC-MW-DUP01-041615SD	MSD	GROUN	4/20/15	45.0	50.0	
2065612006	MRC-MW-53B-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612007	MRC-MW-53A-041615	SAM	GROUN	4/20/15	45.0	50.0	
2065612008	MRC-MW-08A-041615	SAM	GROUN	4/20/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1336																X									
Standard #1 (0.2ppb	1.00	1337																X									
	1.00	1338																X									
	1.00	1339																X									
	1.00	1340																X									
	1.00	1341																X									
ICV1	1.00	1342																X									
ICB1	1.00	1343																X									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
CCV2	1.00	1407																X									
CCB2	1.00	1409																X									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2166613	1.00	1414																X									
2166614	1.00	1415																X									
ZZZZZZ	1.00	1416																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
CCV3	1.00	1420																X									
CCB3	1.00	1421																X									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1430																									
ZZZZZZ	1.00	1431																									
ZZZZZZ	1.00	1432																									
CCV4	1.00	1433																X									
CCB4	1.00	1434																X									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1438																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1441																									
ZZZZZZ	1.00	1442																									
2065612002	1.00	1443																X									
ZZZZZZ	1.00	1444																									
ZZZZZZ	1.00	1445																									
CCV5	1.00	1446																X									
CCB5	1.00	1448																X									
ZZZZZZ	1.00	1449																									
ZZZZZZ	1.00	1450																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1452																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1454																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1504																										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1507																										
ZZZZZZ	1.00	1508																										
ZZZZZZ	1.00	1509																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1514																										
ZZZZZZ	1.00	1516																										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1519																										
ZZZZZZ	1.00	1520																										
ZZZZZZ	1.00	1521																										
ZZZZZZ	1.00	1522																										
ZZZZZZ	1.00	1523																										
ZZZZZZ	1.00	1524																										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										
ZZZZZZ	1.00	1527																										
ZZZZZZ	1.00	1528																										
ZZZZZZ	1.00	1529																										
ZZZZZZ	1.00	1530																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042115W

Start Date: 4/21/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1532																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1534																									
ZZZZZZ	1.00	1535																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1537																									
ZZZZZZ	1.00	1538																									
ZZZZZZ	1.00	1539																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1541																									
ZZZZZZ	1.00	1542																									
ZZZZZZ	1.00	1543																									
ZZZZZZ	1.00	1545																									
ZZZZZZ	1.00	1546																									
ZZZZZZ	1.00	1557																									
ZZZZZZ	1.00	1558																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1205																X									
Standard #1 (0.2ppb	1.00	1206																X									
	1.00	1207																X									
	1.00	1208																X									
	1.00	1209																X									
	1.00	1210																X									
ICV1	1.00	1212																X									
ICV2	1.00	1214																X									
ICB1	1.00	1215																X									
ZZZZZZ	1.00	1216																									
ZZZZZZ	1.00	1217																									
ZZZZZZ	1.00	1218																									
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1220																									
ZZZZZZ	1.00	1221																									
ZZZZZZ	1.00	1222																									
ZZZZZZ	1.00	1223																									
ZZZZZZ	1.00	1224																									
ZZZZZZ	1.00	1225																									
ZZZZZZ	1.00	1226																									
ZZZZZZ	1.00	1227																									
ZZZZZZ	1.00	1228																									
ZZZZZZ	1.00	1229																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1232																									
ZZZZZZ	1.00	1233																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1235																									
ZZZZZZ	1.00	1236																									
ZZZZZZ	1.00	1237																									
ZZZZZZ	1.00	1238																									
ZZZZZZ	1.00	1239																									
ZZZZZZ	1.00	1240																									
ZZZZZZ	1.00	1241																									
ZZZZZZ	1.00	1242																									
ZZZZZZ	1.00	1243																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1244																									
ZZZZZZ	1.00	1245																									
ZZZZZZ	1.00	1247																									
ZZZZZZ	1.00	1248																									
ZZZZZZ	1.00	1249																									
ZZZZZZ	1.00	1250																									
ZZZZZZ	1.00	1251																									
ZZZZZZ	1.00	1252																									
ZZZZZZ	1.00	1253																									
ZZZZZZ	1.00	1254																									
ZZZZZZ	1.00	1255																									
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1257																									
ZZZZZZ	1.00	1258																									
ZZZZZZ	1.00	1300																									
ZZZZZZ	1.00	1301																									
ZZZZZZ	1.00	1302																									
ZZZZZZ	1.00	1303																									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1305																									
ZZZZZZ	1.00	1306																									
ZZZZZZ	1.00	1307																									
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1310																									
ZZZZZZ	1.00	1312																									
ZZZZZZ	1.00	1313																									
ZZZZZZ	1.00	1314																									
ZZZZZZ	1.00	1315																									
ZZZZZZ	1.00	1316																									
CCV5	1.00	1325																X									
CCB5	1.00	1326																X									
2168200	1.00	1327																X									
2168201	1.00	1328																X									
2065612003	1.00	1329																X									
2065612004	1.00	1331																X									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1332																X									
CCB6	1.00	1333																X									
2065612006	1.00	1334																X									
2065612006S	1.00	1335																X									
2065612006SD	1.00	1336																X									
2065612007	1.00	1337																X									
2065612008	1.00	1338																X									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1344																									
CCV7	1.00	1345																X									
CCB7	1.00	1346																X									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM017|MRC-GW 2015 Sampling

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-017

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1416																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1440																									

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	4/21/2015	13:42	042115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/21/2015	14:07	042115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	4/21/2015	14:20	042115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/21/2015	14:33	042115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/21/2015	14:46	042115W
ICV	Mercury	0.0037	0.004	92		90 - 110	CV	4/23/2015	12:12	042315W
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	12:14	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:25	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:32	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:45	042315W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	13:43	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	14:09	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	14:21	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	14:34	042115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/21/2015	14:48	042115W
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	12:15	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:26	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:33	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:46	042315W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166613			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/21/2015	14:14	042115W
2168200			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/23/2015	13:27	042315W

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: GROUND WATER **Sample ID:** 2065612006 **Client ID:** MRC-MW-53B-041615S **LIMS ID:** 2168202

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612006S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0052		0.0005	U	0.0050	104.00		CV

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** _____ **SAS No.:** _____

Matrix: GROUND WATER **Sample ID:** 2065612006 **Client ID:** MRC-MW-53B-041615SD **LIMS ID:** 2168203

Percent Solids for Sample: 0.00 **Spiked ID:** 2065612006SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0049		0.0005	U	0.0050	98.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** _____ **SAS No.:** _____

Matrix: GROUND WATER **Sample ID:** 2065612006S **Client ID:** MRC-MW-53B-041615SD **LIMS ID:** 2168203

Percent Solids for Sample: 0.00 **Duplicate ID:** 2065612006SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0052		0.0049		5.9		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166614									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-017

Contract: TMM017|MRC-GW 2015 Sampling **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2168201									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-017

Contract: TMM017|MRC-GW 2015 **Lab Code:** CAS
Sampling

Method: CV

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68399						
2166613	MB for HBN 68399 [MDIG/50439	MB	QC-WAT	4/21/15	25.0	25.0	
2166614	LCS for HBN 68399 [MDIG/50439	LCS	QC-WAT	4/21/15	25.0	25.0	
2065612002	MRC-MW-71A-041615	SAM	GROUN	4/21/15	25.0	25.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-017

Contract: TMM017|MRC-GW 2015 **Lab Code:** CAS
Sampling

Method: CV

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68924						
2168200	MB for HBN 68924 [MDIG/50496	MB	QC-WAT	4/23/15	25.0	25.0	
2168201	LCS for HBN 68924 [MDIG/50496	LCS	QC-WAT	4/23/15	25.0	25.0	
2065612003	MRC-MW-71B-041615	SAM	GROUN	4/23/15	25.0	25.0	
2065612004	MRC-MW-DUP01-041615	SAM	GROUN	4/23/15	25.0	25.0	
2065612006	MRC-MW-53B-041615	SAM	GROUN	4/23/15	25.0	25.0	
2065612006S	MRC-MW-53B-041615S	MS	GROUN	4/23/15	25.0	25.0	
2065612006SD	MRC-MW-53B-041615SD	MSD	GROUN	4/23/15	25.0	25.0	
2065612007	MRC-MW-53A-041615	SAM	GROUN	4/23/15	25.0	25.0	
2065612008	MRC-MW-08A-041615	SAM	GROUN	4/23/15	25.0	25.0	

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511258

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 444330
Analyzed: 04/28/2015 14:25
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 444331
Analyzed: 04/28/2015 14:46
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1511256001	**MS:** 444332	**MSD:** 444333
Analyzed: 04/28/2015 15:05	**Analyzed:** 04/28/2015 15:24	**Analyzed:** 04/28/2015 15:43
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.800	4.62	5	* 76.4	85.3	112.8	4.74	78.9	2.57	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511258

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	444326			**CCV:**	444334		
Analyzed:	04/28/2015 13:09			**Analyzed:**	04/28/2015 18:53		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 15%			**Criteria:**	± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	
Perchlorate	26.0	25.0	104	24.6	25.0	98.4	

Interference Check Sample

ICSA:	444329		
Analyzed:	04/28/2015 14:06		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	444328			**LODV:**	444335		
Analyzed:	04/28/2015 13:47			**Analyzed:**	04/28/2015 19:12		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 50%			**Criteria:**	± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	
Perchlorate	0.145	0.100	145	0.163	0.100	*	163

Comments

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect.
The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	4/29/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

	SAMPLE ID	**MRC-MW-53B-041615**					
SAMPLE CALC	**for trichloroethene**						
IS AREA	**DILUTION**	**COMPOUND OF INTEREST AREA**	**IS AMOUNT (ug/L)**	**Final Extract Volume (mL)**		**AVE RRF**	**CONCENTRATION (ug/L)**
705838	5	383608	30	5		0.3311	246.25
				SampleVolume (mL)			
				5			

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VOLATILE ORGANICS ANALYSIS DATA SHEET

Sample Calculation

SAMPLE NO.

MRC-MW-53B-041615-DL5

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-017

Matrix (soil/water): WATER Lab Sample ID: 2065612006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042314.D

Level (low/med): Date Received: 4/16/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	Methyl t-Butyl Ether	5.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	25.0	U
75-09-2	Methylene Chloride	5.0	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	246	
75-69-4	Trichlorofluoromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
95-47-6	o-Xylene	5.0	U
108383/106423	mp-Xylene	10	U

Sample Calculation

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150423.b\15042314
Lab Smp Id: 2065612006 Client Smp ID: MRC-MW-53B-041615
Inj Date : 23-APR-2015 15:10
Operator : TMP Inst ID: ms15.i
Smp Info : 2065612006;;1;;;;;5
Misc Info : ZZ VOMS 35677 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150423.b\15-8260b
Meth Date : 24-Apr-2015 10:31 joshua Quant Type: ISTD
Cal Date : 17-APR-2015 12:23 Cal File: 15041709.D
Als bottle: 14
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	Compound Not Detected.						
4 Bromomethane	94	1.667	1.667	(0.427)	2286	0.60420	3.02102(aQ)	
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	Compound Not Detected.						
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	Compound Not Detected.						
10 1,1-Dichloroethene	61	2.148	2.148	(0.549)	29251	3.11671	15.5835	
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	Compound Not Detected.						
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

Sample Calculation

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.201	3.195	(0.819)	25130	2.64245	13.2123	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	210576	26.5735	132.868	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	3.681	3.681	(0.941)	7149	0.24481	1.22404(a)	
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	252114	31.7389	158.694	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	705838	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	383608	49.2509	246.255	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.859	4.859	(0.822)	674232	28.3687	141.843	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

Sample Calculation

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-017

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JUNE 17, 2015**

FROM: **MICHELLE L. ALLEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC & INORGANIC DATA VALIDATION – VOC/1,4-DIOXANE/METALS/ PERCHLORATE**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) GROUNDWATER SAMPLING
SDG 2065944R

SAMPLES: 4/Aqueous/VOC

MRC-MW-110A-041715 MRC-MW-110B-041715 MRC-MW-11A-041715
TB-041715

3/Aqueous/1,4-Dioxane/Metals

MRC-MW-110A-041715 MRC-MW-110B-041715 MRC-MW-11A-041715

2/Aqueous/Perchlorate

MRC-MW-110A-041715 MRC-MW-110B-041715

Overview

The sample set for LMC-MRC, SDG 2065944R consisted of four (4) aqueous environmental samples and one (1) trip blank. Three (3) aqueous environmental samples and the one (1) trip blank were analyzed for Volatile Organic Compounds (VOC). Three (3) aqueous environmental sample were analyzed for 1,4-dioxane and metals. Two (2) aqueous environmental samples were analyzed for perchlorate. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 17, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6010C, 6020A, 7470A, and 6850, and EPA Method 522 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, Interference Check Sample (ICS) results, laboratory method/preparation and trip blank results, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, internal standard areas, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- The VOC initial and continuing calibrations performed on instrument ms15.i had Relative Response Factors (RRFs) for 1,4-dioxane below the 0.005 minimum response criterion. All VOC samples were affected. The non-detected results reported for this compound in the affected samples were qualified as rejected, (UR).

Minor

- The VOC continuing calibration performed on 04/23/15 @ 11:17 had a Percent Drift (%Drift) for bromomethane and Percent Differences (%Ds) for carbon disulfide, dichlorodifluoromethane, and methyl cyclohexane which exceeded the 20% quality control limit. Samples MRC-MW-102A-

042015, and MRC-MW-102B-042015 were affected. No action was taken for bromomethane in sample MRC-MW-110B-041715 because the detected result was qualified for laboratory blank contamination. The detected and non-detected results reported for these compounds in the affected samples were qualified as estimated, (J) and (UJ), respectively.

- The closing Limit of Detection Verification (LODV) for perchlorate exceeded the ± 50% quality control criteria. The detected results reported for perchlorate in the affected samples, MRC-MW-110A-041715 and MRC-MW-110B-041715, were qualified as estimated, (J).

- The following analytes below were detected in the laboratory method/preparation and/or trip blanks at the following maximum concentrations:

Compound/Analyte	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane (1)	0.67	3.35
Bromomethane (2)	0.62	3.1
Tetrachloroethene (3)	0.39	1.95
Molybdenum (3)	0.0075 mg/L	0.0375 mg/L
Iron (4)	0.029 mg/L	0.145 mg/L

(1) - Maximum concentration detected in the laboratory method blank, 2167095, affecting sample TB-041715.
(2) - Maximum concentration detected in the laboratory method blank, 2168253, affecting samples MRC-MW-102A-042015 and MRC-MW-102B-042015.
(3) - Maximum concentration detected in the trip blank, TB-041715, affecting all VOC samples.
(3) - Maximum concentration detected in the 6020A initial calibration blank affecting all metals samples.
(4) - Maximum concentration detected in the 6010C laboratory preparation blank affecting all metals samples.

Action levels of 5X the maximum concentration were established to evaluate for blank contamination. Dilution factor, if necessary, was taken into consideration during the application of the action level. The detected results reported for these compounds in the affected samples below the established action level were qualified as non-detected, (U). No action was taken in the trip blank because field quality control blanks are not qualified for laboratory blank contamination.

- The VOC Laboratory Control Sample (LCS) analysis analyzed on 04/23/15 had Percent Recoveries (%Rs) for trans-1,2-dichloroethene and methylene chloride above the upper quality control limit. Samples MRC-MW-110A-041715, MRC-MW-110B-041715, and MRC-MW-11A-041715 were affected. No action was taken for methylene chloride because this compound was not detected in the affected samples. The detected result reported for trans-1,2-dichloroethene in sample MRC-MW-110A-041715 was qualified as estimated, (J).

- The VOC LCS analysis analyzed on 04/21/15 had a %R for cis-1,3-dichloropropene below the lower quality control limit. Sample TB-041715 was affected. The non-detected result reported for this compound was qualified as estimated, (UJ), in the affected trip blank.

- The perchlorate Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses performed on sample MRC-MW-110A-041715 had %Rs for below the lower quality control limit. The detected result reported for perchlorate in the parent sample was qualified as estimated, (J).

- Detected results reported below the RL but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

The 1,4-dioxane MS/MSD analyses performed on sample MRC-MW-11A-041715 had a MSD %R for 1,4-dioxane above the upper quality control limit. The Relative Percent Difference (RPD) exceeded the 50% quality control criterion. No action was taken in the parent sample because the MS and LCS %Rs were compliant.

Manganese was reported at a 10X dilution in sample MRC-MW-110A-041715.

1,4-Dioxane was reported in both the VOC fraction and the EPA Method 522 analysis for samples MRC-MW-110A-041715, MRC-MW-110B-041715, and MRC-MW-11A-041715.

Non-detected results were reported to the MDL.

Executive Summary

Laboratory Performance: The VOC initial an continuing RRFs for 1,4-dioxane were below 0.005. VOC continuing calibration %Drifts and %Ds exceeded 20%. Contaminants were detected in the VOC and metals laboratory preparation/method blanks. The VOC LCS analyses had noncompliant %Rs.

Other Factors Affecting Data Quality: The trip blank contained bromomethane and tetrachloroethene. The 1,4-dioxane and perchlorate MS/MSD analyses had noncompliant %Rs and/or RPDs. Results below the RL were estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Michelle L. Allen
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-110A-041715			MRC-MW-110B-041715			MRC-MW-11A-041715			TB-041715		
SDG: 2065944R	LAB_ID	2065944003			2065944004			2065944002			2065944001		
FRACTION: OV	SAMP_DATE	4/17/2015			4/17/2015			4/17/2015			4/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1.1			1	U		3.6			1	U	
1,1-DICHLOROETHENE		1.1			0.75	J	P	19			1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U		7	U		7	U	
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DIOXANE		320	UR	C	320	UR	C	320	UR	C	320	U	
2-BUTANONE		10	U		10	U		10	U		10	U	
2-HEXANONE		5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		10	U		3.5	J	P	10	U		10	U	
BENZENE		2.1			47.4			1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		1	UJ	C	0.59	U	A	1	UJ	C	0.53	J	P
CARBON DISULFIDE		1	UJ	C	0.48	J	CP	1	UJ	C	1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		0.34	J	P	1	U		1	U	
CIS-1,2-DICHLOROETHENE		8.3			5.8			3.5			1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	UJ	E
CYCLOHEXANE		1	U		0.85	J	P	1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-110A-041715			MRC-MW-110B-041715			MRC-MW-11A-041715			TB-041715		
SDG: 2065944R	LAB_ID	2065944003			2065944004			2065944002			2065944001		
FRACTION: OV	SAMP_DATE	4/17/2015			4/17/2015			4/17/2015			4/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	UJ	C	1	UJ	C	1	UJ	C	1	U	
ETHYLBENZENE		1	U		2.2			1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U		1	U	
M+P-XYLENES		2	U		2.2			2	U		2	U	
METHYL ACETATE		2	U		2	U		2	U		2	U	
METHYL CYCLOHEXANE		1	UJ	C	1	UJ	C	1	UJ	C	1	U	
METHYL TERT-BUTYL ETHER		1	U		2.8			1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		1	U		2.3			1	U		1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U		1	U		0.39	J	P
TOLUENE		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		0.41	J	EP	1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		33			38.8			5.2			1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.57	J	P	1	U		0.76	J	P	1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-110A-041715			MRC-MW-110B-041715			MRC-MW-11A-041715		
SDG: 2065944R	LAB_ID	2065944003			2065944004			2065944002		
FRACTION: OS	SAMP_DATE	4/17/2015			4/17/2015			4/17/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		2.8			3.8			4.3	J	D

PROJ_NO: 06247	NSAMPLE	MRC-MW-110A-041715			MRC-MW-110A-041715-DL			MRC-MW-110B-041715			MRC-MW-11A-041715		
SDG: 2065944R	LAB_ID	2065944003			2065944003			2065944004			2065944002		
FRACTION: M	SAMP_DATE	4/17/2015			4/17/2015			4/17/2015			4/17/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U					0.00078	J	P	0.0056		
ARSENIC		0.003	U					0.0012	J	P	0.003	U	
BARIUM		1.2						0.28			0.041		
BERYLLIUM		0.01						0.001	U		0.001	U	
CADMIUM		0.00099	J	P				0.0011	U		0.0011	U	
CHROMIUM		0.0017	J	P				0.004			0.003		
COBALT		1.1						0.1			0.026		
COPPER		0.0031	J	P				0.01			0.0044	J	P
IRON		30.4						1.5			12.3		
LEAD		0.0022	U					0.0022	J	P	0.0062		
MANGANESE					23.1			0.53			2.8		
MERCURY		0.0005	U					0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	U					0.0027	U	A	0.0011	U	A
NICKEL		0.69						0.096			0.012		
SELENIUM		0.0056	U					0.0056	U		0.0056	U	
SILVER		0.0022	U					0.0022	U		0.0022	U	
THALLIUM		0.001	U					0.001	U		0.001	U	
VANADIUM		0.00097	J	P				0.0038			0.0048		

PROJ_NO: 06247	NSAMPLE	MRC-MW-110A-041715			MRC-MW-110B-041715		
SDG: 2065944R	LAB_ID	003			004		
FRACTION: MISC	SAMP_DATE	4/17/2015			4/17/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERCHLORATE		0.8	J	CD	1.6	J	C

Appendix B

Results as Reported by the Laboratory

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-110A-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042322.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	2.1	
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.1	
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.1	
156-59-2	cis-1,2-Dichloroethene	8.3	
156-60-5	trans-1,2-Dichloroethene	0.41	J
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-110A-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042322.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	33.0	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	0.57	J
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-110B-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944004

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042323.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	3.5	J
71-43-2	Benzene	47.4	
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.59	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.48	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	0.34	J
110-82-7	Cyclohexane	0.85	J
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	0.75	J
156-59-2	cis-1,2-Dichloroethene	5.8	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	2.2	
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-110B-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944004

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042323.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	2.8	
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	38.8	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	2.3	
108383/106423	mp-Xylene	2.2	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-11A-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042316.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	3.6	
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	19.0	
156-59-2	cis-1,2-Dichloroethene	3.5	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-11A-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042316.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	5.2	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	0.76	J
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042119.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.53	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042119.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	0.39	J
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-11
0A-041715

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix: (soil/water) WATER Lab Sample ID: 2065944003

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042325

Level: (low/med) LOW Date Received: 04/18/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)	UG/L	Q
123-91-1	1,4-Dioxane		2.8	_____

FORM I SV

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-11
OB-041715

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix: (soil/water) WATER Lab Sample ID: 2065944004

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042326

Level: (low/med) LOW Date Received: 04/18/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	3.8	_____

FORM I SV

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-1
1A-041715

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix: (soil/water) WATER Lab Sample ID: 2065944002

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042322

Level: (low/med) LOW Date Received: 04/18/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	4.3	_____

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6020 3015

Sample ID: 2065944003 **Client ID:** MRC-MW-110A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68265 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:15:11
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	04:15:11
Barium	7440-39-3	1.2	mg/L			M	0.0056	1.00	4/21/2015	04:15:11
Beryllium	7440-41-7	0.010	mg/L			M	0.0010	1.00	4/21/2015	04:15:11
Cadmium	7440-43-9	0.0010	mg/L	J		M	0.0011	1.00	4/21/2015	04:15:11
Chromium	7440-47-3	0.0017	mg/L	J		M	0.0022	1.00	4/21/2015	04:15:11
Cobalt	7440-48-4	1.1	mg/L			M	0.0056	1.00	4/21/2015	04:15:11
Copper	7440-50-8	0.0031	mg/L	J		M	0.0056	1.00	4/21/2015	04:15:11
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:15:11
Manganese	7439-96-5	23.1	mg/L			M	0.056	10.00	4/21/2015	04:27:43
Molybdenum	7439-98-7	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:15:11
Nickel	7440-02-0	0.69	mg/L			M	0.0056	1.00	4/21/2015	04:15:11
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	04:15:11
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:15:11
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	04:15:11
Vanadium	7440-62-2	0.0010	mg/L	J		M	0.0022	1.00	4/21/2015	04:15:11

Comments:

-

6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6010C 3015

Sample ID: 2065944003 **Client ID:** MRC-MW-110A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	30.4	mg/L			P	0.067	1.00	4/22/2015	09:59:14

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 7470A

Sample ID: 2065944003 **Client ID:** MRC-MW-110A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:48:24

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6020 3015

Sample ID: 2065944004 **Client ID:** MRC-MW-110B-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68265 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.00078	mg/L	J		M	0.0022	1.00	4/21/2015	04:18:51
Arsenic	7440-38-2	0.0012	mg/L	J		M	0.0030	1.00	4/21/2015	04:18:51
Barium	7440-39-3	0.28	mg/L			M	0.0056	1.00	4/21/2015	04:18:51
Beryllium	7440-41-7	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	04:18:51
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	04:18:51
Chromium	7440-47-3	0.0040	mg/L			M	0.0022	1.00	4/21/2015	04:18:51
Cobalt	7440-48-4	0.10	mg/L			M	0.0056	1.00	4/21/2015	04:18:51
Copper	7440-50-8	0.010	mg/L			M	0.0056	1.00	4/21/2015	04:18:51
Lead	7439-92-1	0.0022	mg/L	J		M	0.0022	1.00	4/21/2015	04:18:51
Manganese	7439-96-5	0.53	mg/L			M	0.0056	1.00	4/21/2015	04:18:51
Molybdenum	7439-98-7	0.0027	mg/L			M	0.0022	1.00	4/21/2015	04:18:51
Nickel	7440-02-0	0.096	mg/L			M	0.0056	1.00	4/21/2015	04:18:51
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	04:18:51
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:18:51
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	04:18:51
Vanadium	7440-62-2	0.0038	mg/L			M	0.0022	1.00	4/21/2015	04:18:51

Comments:

-

6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6010C 3015

Sample ID: 2065944004 **Client ID:** MRC-MW-110B-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	1.5	mg/L			P	0.13	2.00	4/22/2015	10:08:31

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 7470A

Sample ID: 2065944004 **Client ID:** MRC-MW-110B-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:49:30

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6020 3015

Sample ID: 2065944002 **Client ID:** MRC-MW-11A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68265 **Prep Date:** 4/20/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0056	mg/L			M	0.0022	1.00	4/21/2015	04:11:28
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/21/2015	04:11:28
Barium	7440-39-3	0.041	mg/L			M	0.0056	1.00	4/21/2015	04:11:28
Beryllium	7440-41-7	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	04:11:28
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/21/2015	04:11:28
Chromium	7440-47-3	0.0030	mg/L			M	0.0022	1.00	4/21/2015	04:11:28
Cobalt	7440-48-4	0.026	mg/L			M	0.0056	1.00	4/21/2015	04:11:28
Copper	7440-50-8	0.0044	mg/L	J		M	0.0056	1.00	4/21/2015	04:11:28
Lead	7439-92-1	0.0062	mg/L			M	0.0022	1.00	4/21/2015	04:11:28
Manganese	7439-96-5	2.8	mg/L			M	0.0056	1.00	4/21/2015	04:11:28
Molybdenum	7439-98-7	0.0011	mg/L	J		M	0.0022	1.00	4/21/2015	04:11:28
Nickel	7440-02-0	0.012	mg/L			M	0.0056	1.00	4/21/2015	04:11:28
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/21/2015	04:11:28
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/21/2015	04:11:28
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/21/2015	04:11:28
Vanadium	7440-62-2	0.0048	mg/L			M	0.0022	1.00	4/21/2015	04:11:28

Comments:

-

6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 6010C 3015

Sample ID: 2065944002 **Client ID:** MRC-MW-11A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	12.3	mg/L			P	0.067	1.00	4/22/2015	09:56:07

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018 **Method Type:** 7470A

Sample ID: 2065944002 **Client ID:** MRC-MW-11A-041715

Matrix: WATER **Date Received:** 4/18/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:47:19

Comments:

ANALYTICAL REPORT

Workorder: 34-1511256
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: 2065944 003 | Sampling Site: NA | Collected: 04/17/2015
Lab ID: 1511256001 | Media: 125 mL Nalgene | Received: 04/22/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1562 (HBN: 147840) | **Percent Solid:** NA
Analyzed: 04/28/2015 15:05 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**0.80**	0.060	0.20	1	

Sample ID: 2065944 004 | Sampling Site: NA | Collected: 04/17/2015
Lab ID: 1511256002 | Media: 125 mL Nalgene | Received: 04/22/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1562 (HBN: 147840) | **Percent Solid:** NA
Analyzed: 04/28/2015 16:02 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**1.6**	0.060	0.20	1	

Comments

Quality Control: EPA 6850 - (HBN: 147840)

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 04/29/2015 11:04	/S/ Thomas T. McKay 04/29/2015 16:04

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DN

MIDDLETOWN, PA

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5900 +1 585 288 8475 (fax)

PAGE _

* 2 0 6 5 9 4 4 *

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: 20251 Century Blvd. Ste. 200 Germantown, MD, 20874	
Phone #: 301-572-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Cor.)

PRESERVATIVE: 1 7 0 — 2

NUMBER OF CONTAINERS

GC/MS VOAs • 8260 • 624 • CLP — VOC's 8260
GC/MS SVOAs • 8270 • 625 — 1-4 dioxane 522
GC VOAs • 8021 • 601/602 — Perchlorate 6850
PESTICIDES • 8081 • 608
PCBs • 8082 • 608
METALS, TOTAL (List in comments below) — 6020A
METALS DISSOLVED (List in comments below)

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

REMARKS/ ALTERNATE DESCRIPTION

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs	GC/MS SVOAs	GC VOAs	PESTICIDES	PCBs	METALS, TOTAL	METALS DISSOLVED	REMARKS/ ALTERNATE DESCRIPTION
1	TB-041715		4/17/15	—	Aq	3	X	—						
2	MRC-MW-11A-041715			0930		5	X3	X1	—	—		1X	—	
3	MRC-MW-110A-041715			1125		6	X3	X1	X1	—		X1	—	
4	MRC-MW-110B-041715			1240		6	X3	X1	X1	—		X1	—	

AG
4/18/15
1053

SPECIAL INSTRUCTIONS/COMMENTS
Metals
Samples to be Sent to Middletown, PA LAB
SEE SCOPE FOR METALS LIST

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
STANDARD
REQUESTED REPORT DATE
_____

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____

INVOICE INFORMATION
PO #
BILL TO:

	Y	N	Initials
Custody Seals Present?	✓		DMB
(if present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: _____ °C
Cooler #: _____
Therm ID: TH 241
Ship Carrier: (FedEx) UPS DHL _____
Tracking #: 8070 7554 5720

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature
Printed Name: Josh Mullis	Printed Name: D. M Blank	Printed Name	Printed Name
Firm: Tetra Tech	Firm: ALS	Firm	Firm
Date/Time: 4/17/15 1430	Date/Time: 4.18.15 0915	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-018

Sample Management

This report contains the results of the analysis of four (4) ground water samples collected on April 17-18, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 18, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Two (2) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Four (4) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2167095, bromomethane was detected at 0.67J µg/L.
- In 2168253, bromomethane was detected at 0.62J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2167096, cis-1,3-dichloropropene was recovered below the control limits.
- In 2168254, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Three (3) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2167684 and 2167685, was extracted and analyzed from project sample MRC-MW-11A-041715 (2065944002). Results for precision and accuracy were recovered within control limits; except as follows:

- In 2167685, 1,4-dioxane was recovered above the control limits.
- The %RPD for 1,4-dioxane was above the control limits.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.00075 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3b represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

<u>Total Mercury by EPA Method 7470A</u>

Sample handling. Three (3) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2065944001	1	TB-041715	SW846 8260C	cis-1,3-Dichloropropene

The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 80.9 and the control limits were 81 to 121.

2065944003	1	MRC-MW-110A-041715	SW846 8260C	trans-1,2-Dichloroethene

The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 130 and the control limits were 71 to 122.

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2065944 TMM018|MRC GW 2015

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2065944001	TB-041715	Water	4/18/2015 09:15	4/18/2015 09:15	Collected by Client
2065944002	MRC-MW-11A-041715	Water	4/17/2015 09:30	4/18/2015 09:15	Collected by Client
2065944003	MRC-MW-110A-041715	Water	4/17/2015 11:25	4/18/2015 09:15	Collected by Client
2065944004	MRC-MW-110B-041715	Water	4/17/2015 12:40	4/18/2015 09:15	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2065944 TMM018|MRC GW 2015

Workorder Comments

See attached subcontracted perchlorate results from ALS-SLC. VLF 5/1/15

Sample Comments

Lab ID: 2065944004 **Sample ID:** MRC-MW-110B-041715 **Sample Type:** SAMPLE

Due to the sodium content, this sample required a 1/2 dilution for the 6010 total metals analysis. The detection limit was raised accordingly. SRT 04.22.15

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-018

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2165640(LCS)	92.9	82.4	90.5	88.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-018

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2167095(MB)	85.2	87.2	101	98.3	0
03	2167096(LCS)	84.0	81.6	92.4	84.2	0
04	TB-041715	88.2	89.9	106	95.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-018

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
05	2168253(MB)	88.2	87.7	104	94.9	0
06	2168254(LCS)	85.0	84.1	95.4	87.1	0
07	MRC-MW-11A-041715	89.1	90.8	108	96.2	0
08	MRC-MW-110A-041715	88.5	89.7	108	96.2	0
09	MRC-MW-110B-041715	89.0	85.6	103	97.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Lab File ID: 15041707.D Date Analyzed: 4/17/2015

Instrument ID: ms15.i Time Analyzed: 11:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	393536	5.913	362552	7.686	921216	3.910
UPPER LIMIT	787072	6.413	725104	8.186	1842432	4.410
LOWER LIMIT	196768	5.413	181276	7.186	460608	3.410
SAMPLE NO.						
2165640(LCS)	389068	5.912	362447	7.686	881867	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Lab File ID: 15042102.D Date Analyzed: 4/21/2015

Instrument ID: ms15.i Time Analyzed: 10:19

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	400238	5.912	370616	7.686	895881	3.910
UPPER LIMIT	800476	6.412	741232	8.186	1791762	4.410
LOWER LIMIT	200119	5.412	185308	7.186	447941	3.410
SAMPLE NO.						
1800	400238	5.912	370616	7.686	895881	3.910
2167095(MB)	279576	5.912	225775	7.686	732635	3.910
2167096(LCS)	375511	5.913	339659	7.686	834965	3.910
TB-041715	271110	5.912	213795	7.686	695917	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Lab File ID: 15042302.D Date Analyzed: 4/23/2015

Instrument ID: ms15.i Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	390234	5.912	359420	7.680	891295	3.910
UPPER LIMIT	780468	6.412	718840	8.180	1782590	4.410
LOWER LIMIT	195117	5.412	179710	7.180	445648	3.410
SAMPLE NO.						
1800	390234	5.912	359420	7.680	891295	3.910
2168253(MB)	297853	5.913	231105	7.686	726287	3.910
2168254(LCS)	365551	5.913	329106	7.686	807783	3.910
MRC-MW-11A-041715	269753	5.913	213133	7.686	698254	3.910
MRC-MW-110A-04171	273235	5.912	217804	7.686	701948	3.910
MRC-MW-110B-04171	277413	5.912	229095	7.686	740179	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2167095

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-018

Lab File ID: 15042105.D Lab Sample ID: 2167095

Date Analyzed: 4/21/2015 Time Analyzed: 11:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2167096(LCS)	2167096	15042106.D	12:01
TB-041715	2065944001	15042119.D	15:53

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.67	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167095(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2167095

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042105.D

Level (low/med): Date Received: 4/21/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		106	106	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.3	106	(73-117)
Bromodichloromethane	20.0		20.6	103	(79-126)
Bromoform	20.0		17.0	85.2	(70-123)
Bromomethane	20.0		24.5	123	(45-148)
2-Butanone	100		99.5	99.5	(50-152)
Carbon Disulfide	20.0		21.2	106	(57-131)
Carbon Tetrachloride	20.0		21.6	108	(62-132)
Chlorobenzene	20.0		20.6	103	(85-117)
Chlorodibromomethane	20.0		16.8	84.1	(77-122)
Chloroethane	20.0		19.2	96.2	(51-142)
Chloroform	20.0		21.4	107	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		20.8	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.6	93	(59-133)
1,2-Dibromoethane	20.0		19.8	98.8	(80-124)
1,2-Dichlorobenzene	20.0		20.6	103	(82-118)
1,3-Dichlorobenzene	20.0		21.5	107	(81-118)
1,4-Dichlorobenzene	20.0		20.3	102	(81-116)
Dichlorodifluoromethane	20.0		20.8	104	(17-166)
1,1-Dichloroethane	20.0		20.6	103	(78-124)
1,2-Dichloroethane	20.0		21.1	105	(70-133)
1,1-Dichloroethene	20.0		22.7	113	(63-128)
cis-1,2-Dichloroethene	20.0		20.8	104	(78-125)
trans-1,2-Dichloroethen	20.0		22.8	114	(71-122)
1,2-Dichloropropane	20.0		21.2	106	(81-127)
cis-1,3-Dichloropropene	20.0		16.2	80.9*	(81-121)
trans-1,3-Dichloroprope	20.0		17.2	85.9	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2167096

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		464	92.8	(1-280)
Ethylbenzene	20.0		19.0	95.1	(80-124)
Freon 113	20.0		22.4	112	(50-130)
2-Hexanone	100		85.1	85.1	(65-154)
Isopropylbenzene	20.0		17.4	86.8	(73-129)
Methyl acetate	20.0		19.5	97.3	(70-130)
Methyl cyclohexane	20.0		20.8	104	(70-130)
Methyl t-Butyl Ether	20.0		19.4	97	(69-115)
4-Methyl-2-Pentanone(MI	100		91.4	91.4	(71-146)
Methylene Chloride	20.0		23.4	117	(76-121)
Styrene	20.0		18.1	90.4	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.8	104	(72-124)
Toluene	20.0		19.1	95.5	(80-125)
1,2,3-Trichlorobenzene	20.0		17.5	87.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.2	81.2	(67-123)
1,1,1-Trichloroethane	20.0		21.6	108	(66-130)
1,1,2-Trichloroethane	20.0		19.3	96.5	(82-126)
Trichloroethene	20.0		21.1	106	(77-124)
Trichlorofluoromethane	20.0		19.9	99.4	(38-123)
Vinyl Chloride	20.0		20.0	100	(27-138)
o-Xylene	20.0		16.0	80.2	(79-124)
mp-Xylene	40.0		37.1	92.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 1 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168253

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-018

Lab File ID: 15042305.D Lab Sample ID: 2168253

Date Analyzed: 4/23/2015 Time Analyzed: 12:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168254(LCS)	2168254	15042306.D	12:51
MRC-MW-11A-041715	2065944002	15042316.D	15:44
MRC-MW-110A-041715	2065944003	15042322.D	17:27
MRC-MW-110B-041715	2065944004	15042323.D	17:44

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.62	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		110	110	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.5	112	(73-117)
Bromodichloromethane	20.0		21.6	108	(79-126)
Bromoform	20.0		16.9	84.5	(70-123)
Bromomethane	20.0		27.2	136	(45-148)
2-Butanone	100		98.9	98.9	(50-152)
Carbon Disulfide	20.0		24.0	120	(57-131)
Carbon Tetrachloride	20.0		23.2	116	(62-132)
Chlorobenzene	20.0		21.5	108	(85-117)
Chlorodibromomethane	20.0		17.1	85.3	(77-122)
Chloroethane	20.0		21.9	109	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		20.8	104	(38-156)
Cyclohexane	20.0		22.4	112	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.4	92.2	(59-133)
1,2-Dibromoethane	20.0		20.2	101	(80-124)
1,2-Dichlorobenzene	20.0		21.2	106	(82-118)
1,3-Dichlorobenzene	20.0		22.3	112	(81-118)
1,4-Dichlorobenzene	20.0		21.1	106	(81-116)
Dichlorodifluoromethane	20.0		20.9	105	(17-166)
1,1-Dichloroethane	20.0		23.5	117	(78-124)
1,2-Dichloroethane	20.0		22.1	110	(70-133)
1,1-Dichloroethene	20.0		24.8	124	(63-128)
cis-1,2-Dichloroethene	20.0		22.9	115	(78-125)
trans-1,2-Dichloroethen	20.0		26.0	130*	(71-122)
1,2-Dichloropropane	20.0		22.3	111	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.5	(81-121)
trans-1,3-Dichloroprope	20.0		17.8	89.2	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		475	95	(1-280)
Ethylbenzene	20.0		20.3	102	(80-124)
Freon 113	20.0		23.8	119	(50-130)
2-Hexanone	100		87.9	87.9	(65-154)
Isopropylbenzene	20.0		18.4	92.1	(73-129)
Methyl acetate	20.0		21.5	108	(70-130)
Methyl cyclohexane	20.0		22.5	112	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		94.8	94.8	(71-146)
Methylene Chloride	20.0		25.7	129*	(76-121)
Styrene	20.0		19.2	96	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.7	98.6	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.5	103	(80-125)
1,2,3-Trichlorobenzene	20.0		17.6	88.1	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		23.5	117	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.4	(82-126)
Trichloroethene	20.0		23.3	116	(77-124)
Trichlorofluoromethane	20.0		20.8	104	(38-123)
Vinyl Chloride	20.0		21.5	107	(27-138)
o-Xylene	20.0		16.9	84.4	(79-124)
mp-Xylene	40.0		39.6	98.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-018

Lab File ID: 15041700.D BFB Injection Date: 4/17/2015

Instrument ID: ms15.i BFB Injection Time: 09:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.3
175	5.0 - 9.0% of mass 174	5.7 (7.0) 1
176	95.0 - 101.0% of mass 174	77.6 (95.4) 1
177	5.0 - 9.0% of mass 176	5.0 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15041703.D	4/17/2015	10:39
1234	1234	15041704.D	4/17/2015	10:56
1235	1235	15041705.D	4/17/2015	11:13
1236	1236	15041706.D	4/17/2015	11:31
1237	1237	15041707.D	4/17/2015	11:48
1238	1238	15041708.D	4/17/2015	12:05
1239	1239	15041709.D	4/17/2015	12:23
2165640(LCS)	2165640	15041714.D	4/17/2015	13:49

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02150			A		0.025420		13.35269
Acrolein	0.04346	0.04700		A		0.046870		8.87083
Acrylonitrile	0.09374	0.09420		A		0.101720		10.11420
Acetonitrile	0.02968			A		0.036650		13.39134
tert-Amyl Ethylether	4213141	4951		L	0.000000	1.627200		0.99780
tert-Amyl methyl ether	5133616	5851		L	0.000000	1.323550		0.99917
tert-Amyl Alcohol	601293	704		L	0.000000	56.396912		0.99814
Benzene	1.27434	1.10894		A		1.241190		10.58614
Benzyl Chloride				Q	0.000000	0.143690	0.029740	0.99991
Bromobenzene	0.97604	0.74747		A		0.902000		14.84422
Bromochloromethane	0.15243	0.14604		A		0.163350		10.25949
Bromodichloromethane	0.44080	0.33394		A		0.392350		13.81932
Bromoform *	1338355	1232		Q	0.000000	0.435990	0.009530	0.99971
Bromomethane	1075271			L	0.000000	6.218590		0.99848
2-Butanone	0.03713			A		0.037740		12.55237
tert.- Butyl Alcohol	0.02376			A		0.024770		7.01068
tert-Butylbenzene	2073194	1739		L	0.000000	1.297790		0.99982
n-Butylbenzene	2204415			L	0.000000	1.224140		0.99935
sec-Butylbenzene	10720671	7378		L	0.000000	0.250660		0.99977
Carbon Disulfide	0.75980	0.60853		A		0.664000		10.57539
Carbon Tetrachloride	0.40632	0.28418		A		0.362980		13.42907
Chloroacetonitrile	325006			Q	0.000000	0.022800	-0.000010	0.99965
Chlorobenzene *	2.19164	1.87636		A		2.138210		9.16523
1-Chlorobutane	0.30442	0.27544		A		0.301730		10.02872
Chlorodibromomethane	2229887	2646		L	0.000000	1.320690		0.99897
Chloroethane	0.20128			A		0.238640		11.97155
2-Chloroethylvinyl ether	0.14061			A		0.128220		10.02306
Chloroform **	3904606	18104		Q	0.030370	0.575280	0.000060	0.99967
1-Chlorohexane	2878567	2684		L	0.000000	1.022160		0.99867
Chloromethane *	0.42875			A		0.515330		14.85648
Chloroprene	0.41952	0.36738		A		0.407690		10.34581
3-Chloro-1-propene	0.29246	0.30678		A		0.314290		6.84089
o-Chlorotoluene	8134248	7088		L	0.000000	0.331320		0.99982
p-Chlorotoluene	7603192	5801		L	0.000000	0.354900		0.99977
Cyclohexane	2984728	4171		L	0.000000	2.262420		0.99982
1,2-Dibromo-3-Chloropropane	0.14266	0.09901		A		0.128270		11.53273

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.65129	0.54870		A		0.613510		11.23085
Dibromomethane	0.19172	0.18388		A		0.192910		6.75287
trans-1,4-Dichloro-2-butene	635655	649		L	0.000000	4.160080		0.99863
1,2-Dichlorobenzene	1.78231	1.55402		A		1.690540		9.20938
1,3-Dichlorobenzene	1.82595	1.40511		A		1.714790		12.13976
1,4-Dichlorobenzene	1.85978	1.89440		A		1.869510		5.23051
Dichlorodifluoromethane	0.39025			A		0.440580		10.81630
1,1-Dichloroethane *		0.53864		A		0.565720		7.47475
1,2-Dichloroethene, Total	5300341	9644		L	0.000000	2.545260		0.99960
1,2-Dichloroethane	0.40364	0.41141		A		0.430720		8.19580
1,1-Dichloroethene **	0.38202	0.39648		A		0.398900		6.23044
cis-1,2-Dichloroethene	0.41233	0.36831		A		0.404200		8.14800
trans-1,2-Dichloroethene	0.37614	0.37806		A		0.388220		7.20134
Dichlorofluoromethane	0.54189	0.61008		A		0.574180		8.04570
1,1-Dichloro-2-Propanone	207685			L	0.000000	69.396950		0.99911
2,2-Dichloropropane	0.36550	0.30570		A		0.332710		9.13718
1,3-Dichloropropane	1.20820	0.99315		A		1.169770		9.65596
1,2-Dichloropropane **	0.33277	0.29602		A		0.317840		9.42977
1,1-Dichloropropene	0.40589	0.33603		A		0.378320		11.86754
cis-1,3-Dichloropropene	3487668	3447		L	0.000000	0.846900		0.99846
trans-1,3-Dichloropropene	3142276	2943		L	0.000000	0.933700		0.99934
1,3-Dichloropropene, Total	6629944	6390		L	0.000000	0.888180		0.99894
Diisobutylene	4686812	32902		L	0.000000	1.435930		0.99976
Diisopropyl ether	0.83077	0.79937		A		0.844300		8.28498
1,4-Dioxane	0.00340			A		0.003300		12.26198
Ethyl Acetate	0.25207	0.25137		A		0.254670		8.19100
Ethyl ether	0.18507	0.19464		A		0.190110		7.07916
Ethyl Methacrylate	2846887	2359		L	0.000000	1.026370		0.99940
Ethyl tert-butyl ether	5580280	7541		L	0.000000	1.203310		0.99983
Ethylbenzene **	3394435	3836		L	0.000000	0.861550		0.99977
Freon 113	0.25000	0.32164		A		0.273740		9.74960
Heptane	1405405	1707		L	0.000000	4.824340		0.99835
Hexachlorobutadiene	0.47840	0.42810		A		0.431370		10.14694
Hexachloroethane	1598514	1616		L	0.000000	1.713730		0.99725
Hexane	0.47877	0.53586		A		0.483430		5.95882
2-Hexanone	6265115	6303		L	0.000000	2.275700		0.99798

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8816753	4948		L	0.000000	0.305930		0.99972
1,3,5-Trimethylbenzene	8637632	5644		L	0.000000	0.312070		0.99981
Vinyl Acetate	431185	521		L	0.000000	15.534290		0.99979
Vinyl Chloride **	0.36981			A		0.390360		7.18993
o-Xylene	4059055	3537		L	0.000000	0.725160		0.99896
mp-Xylene	8374675	8101		L	0.000000	0.699710		0.99963
4-Bromofluorobenzene		4420		L	0.000000	1.162640		0.99966
Dibromofluoromethane				A		0.336800		13.41450
1,2-Dichloroethane-d4	2270423			L	0.000000	2.961950		0.99888
Toluene-d8				A		2.577610		9.74042

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		96.5	96.5	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.2	106	(73-117)
Bromodichloromethane	20.0		20.3	101	(79-126)
Bromoform	20.0		17.1	85.5	(70-123)
Bromomethane	20.0		19.9	99.5	(45-148)
2-Butanone	100		102	102	(50-152)
Carbon Disulfide	20.0		20.9	105	(57-131)
Carbon Tetrachloride	20.0		21.3	106	(62-132)
Chlorobenzene	20.0		20.5	103	(85-117)
Chlorodibromomethane	20.0		17.0	84.9	(77-122)
Chloroethane	20.0		16.7	83.6	(51-142)
Chloroform	20.0		21.0	105	(78-122)
Chloromethane	20.0		19.2	96.2	(38-156)
Cyclohexane	20.0		20.7	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.3	91.6	(59-133)
1,2-Dibromoethane	20.0		20.3	101	(80-124)
1,2-Dichlorobenzene	20.0		19.9	99.4	(82-118)
1,3-Dichlorobenzene	20.0		21.1	105	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.5	(81-116)
Dichlorodifluoromethane	20.0		18.2	91.1	(17-166)
1,1-Dichloroethane	20.0		20.5	103	(78-124)
1,2-Dichloroethane	20.0		20.9	104	(70-133)
1,1-Dichloroethene	20.0		21.6	108	(63-128)
cis-1,2-Dichloroethene	20.0		21.2	106	(78-125)
trans-1,2-Dichloroethen	20.0		22.0	110	(71-122)
1,2-Dichloropropane	20.0		20.7	103	(81-127)
cis-1,3-Dichloropropene	20.0		16.7	83.3	(81-121)
trans-1,3-Dichloroprope	20.0		17.7	88.4	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		502	100	(1-280)
Ethylbenzene	20.0		19.0	94.9	(80-124)
Freon 113	20.0		21.2	106	(50-130)
2-Hexanone	100		93.0	93	(65-154)
Isopropylbenzene	20.0		17.3	86.4	(73-129)
Methyl acetate	20.0		20.6	103	(70-130)
Methyl cyclohexane	20.0		21.8	109	(70-130)
Methyl t-Butyl Ether	20.0		19.6	97.9	(69-115)
4-Methyl-2-Pentanone(MI	100		97.8	97.8	(71-146)
Methylene Chloride	20.0		22.0	110	(76-121)
Styrene	20.0		18.0	90	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.5	102	(72-124)
Toluene	20.0		19.5	97.3	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.6	83	(67-123)
1,1,1-Trichloroethane	20.0		21.5	108	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.1	(82-126)
Trichloroethene	20.0		21.2	106	(77-124)
Trichlorofluoromethane	20.0		18.6	92.8	(38-123)
Vinyl Chloride	20.0		19.3	96.6	(27-138)
o-Xylene	20.0		17.0	84.9	(79-124)
mp-Xylene	40.0		37.5	93.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-018

Lab File ID: 15042100.D BFB Injection Date: 4/21/2015

Instrument ID: ms15.i BFB Injection Time: 09:40

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.0
75	30.0 - 60.0% of mass 95	50.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.5
175	5.0 - 9.0% of mass 174	5.5 (6.9) 1
176	95.0 - 101.0% of mass 174	76.8 (96.6) 1
177	5.0 - 9.0% of mass 176	5.2 (6.8) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042102.D	4/21/2015	10:19
2167095(MB)	2167095	15042105.D	4/21/2015	11:44
2167096(LCS)	2167096	15042106.D	4/21/2015	12:01
TB-041715	2065944001	15042119.D	4/21/2015	15:53

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0230			-9.4	100.0	A
Acrolein	0.0469	0.0446			-4.8	100.0	A
Acrylonitrile	0.1017	0.0931			-8.5	100.0	A
Acetonitrile	0.0366	0.0308			-15.9	100.0	A
tert-Amyl Ethylether	50.0000		41.8644		-16.3	100.0	L
tert-Amyl methyl ether	50.0000		43.2388		-13.5	100.0	L
tert-Amyl Alcohol	250		186		-25.6	100.0	L
Benzene	1.2412	1.2224			-1.5	100.0	A
Benzyl Chloride	50.0000		48.2603		-3.5	100.0	Q
Bromobenzene	0.9020	0.9001			-0.2	100.0	A
Bromochloromethane	0.1634	0.1605			-1.8	100.0	A
Bromodichloromethane	0.3923	0.3986			1.6	100.0	A
Bromoform	50.0000		43.5899	0.100	-12.8	100.0	Q
Bromomethane	50.0000		53.0635		6.1	100.0	L
2-Butanone	0.0377	0.0341			-9.5	100.0	A
tert.- Butyl Alcohol	0.0248	0.0217			-12.5	100.0	A
tert-Butylbenzene	50.0000		44.8853		-10.2	100.0	L
n-Butylbenzene	50.0000		43.4919		-13.0	100.0	L
sec-Butylbenzene	50.0000		44.8330		-10.3	100.0	L
Carbon Disulfide	0.6640	0.5975			-10.0	100.0	A
Carbon Tetrachloride	0.3630	0.3636			0.2	100.0	A
Chloroacetonitrile	250		214		-14.2	100.0	Q
Chlorobenzene	2.1382	2.0488		0.300	-4.2	100.0	A
1-Chlorobutane	0.3017	0.2930			-2.9	100.0	A
Chlorodibromomethane	50.0000		42.3914		-15.2	100.0	L
Chloroethane	0.2386	0.2209			-7.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0875			-31.7	100.0	A
Chloroform	50.0000		48.7596		-2.5	20.0	Q
1-Chlorohexane	50.0000		41.9029		-16.2	100.0	L
Chloromethane	0.5153	0.4229		0.100	-17.9	100.0	A
Chloroprene	0.4077	0.3937			-3.4	100.0	A
3-Chloro-1-propene	0.3143	0.3053			-2.9	100.0	A
o-Chlorotoluene	50.0000		45.3056		-9.4	100.0	L
p-Chlorotoluene	50.0000		45.4683		-9.1	100.0	L
Cyclohexane	50.0000		42.1614		-15.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1147			-10.5	100.0	A
1,2-Dibromoethane	0.6135	0.5757			-6.2	100.0	A
Dibromomethane	0.1929	0.1823			-5.5	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		46.0130		-8.0	100.0	L
1,2-Dichlorobenzene	1.6905	1.6367			-3.2	100.0	A
1,3-Dichlorobenzene	1.7148	1.6972			-1.0	100.0	A
1,4-Dichlorobenzene	1.8695	1.7464			-6.6	100.0	A
Dichlorodifluoromethane	0.4406	0.3942			-10.5	100.0	A
1,1-Dichloroethane	0.5657	0.5288		0.100	-6.5	100.0	A
1,2-Dichloroethene, Total	100		95.0313		-5.0	100.0	L
1,2-Dichloroethane	0.4307	0.4084			-5.2	100.0	A
1,1-Dichloroethene	0.3989	0.3471			-13.0	20.0	A
cis-1,2-Dichloroethene	0.4042	0.3838			-5.0	100.0	A
trans-1,2-Dichloroethene	0.3882	0.3692			-4.9	100.0	A
Dichlorofluoromethane	0.5742	0.5098			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.3327	0.3268			-1.8	100.0	A
1,3-Dichloropropane	1.1698	1.0944			-6.4	100.0	A
1,2-Dichloropropane	0.3178	0.3094			-2.7	20.0	A
1,1-Dichloropropene	0.3783	0.3693			-2.4	100.0	A
cis-1,3-Dichloropropene	50.0000		42.4608		-15.1	100.0	L
trans-1,3-Dichloropropene	50.0000		43.2612		-13.5	100.0	L
1,3-Dichloropropene, Total	100		85.7220		-14.3	100.0	L
Diisobutylene	50.0000		43.3954		-13.2	100.0	L
Diisopropyl ether	0.8443	0.8358			-1.0	100.0	A
1,4-Dioxane	0.0033	0.0031			-5.0	100.0	A
Ethyl Acetate	0.2547	0.2280			-10.5	100.0	A
Ethyl ether	0.1901	0.1761			-7.4	100.0	A
Ethyl Methacrylate	50.0000		40.4282		-19.1	100.0	L
Ethyl tert-butyl ether	50.0000		45.8917		-8.2	100.0	L
Ethylbenzene	50.0000		45.9680		-8.1	20.0	L
Freon 113	0.2737	0.2218			-19.0	100.0	A
Heptane	50.0000		39.1465		-21.7	100.0	L
Hexachlorobutadiene	0.4314	0.4062			-5.8	100.0	A
Hexachloroethane	50.0000		41.8275		-16.3	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.4111			-15.0	100.0	A
2-Hexanone	250		218		-12.6	100.0	L
Iodomethane	50.0000		57.9310		15.9	100.0	Q
Isobutyl alcohol	500		400		-20.0	100.0	L
Isopropyl Alcohol	0.0167	0.0146			-12.6	100.0	A
Isopropylbenzene	50.0000		43.8811		-12.2	100.0	L
p-Isopropyltoluene	50.0000		43.7795		-12.4	100.0	L
Methyl acetate	0.0545	0.0477			-12.3	100.0	A
Methyl acrylate	50.0000		43.9177		-12.2	100.0	L
Methacrylonitrile	50.0000		47.1026		-5.8	100.0	L
Methyl cyclohexane	1.0036	0.9405			-6.3	100.0	A
Methyl methacrylate	50.0000		41.0593		-17.9	100.0	L
Methyl t-Butyl Ether	0.7715	0.7083			-8.2	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		227		-9.2	100.0	L
Methylene Chloride	50.0000		50.9335		1.9	100.0	Q
Naphthalene	50.0000		42.0605		-15.9	100.0	Q
Nitrobenzene	500		408		-18.5	100.0	Q
2-Nitropropane	250		207		-17.1	100.0	L
Octane	50.0000		41.0501		-17.9	100.0	L
Pentachloroethane	0.6478	0.6290			-2.9	100.0	A
Pentane	0.1681	0.1132			-32.7	100.0	A
n-Propanol	0.0219	0.0208			-5.0	100.0	A
Propionitrile	0.0412	0.0383			-7.0	100.0	A
n-Propylbenzene	50.0000		45.5300		-8.9	100.0	L
Styrene	50.0000		44.9960		-10.0	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.6924			0.1	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.8507		0.300	-12.6	100.0	A
Tetrachloroethene	0.6720	0.6146			-8.5	100.0	A
Tetrahydrofuran	0.0755	0.0697			-7.7	100.0	A
Toluene	50.0000		45.8229		-8.4	20.0	L
Total Xylenes	150		134		-10.9	100.0	L
1,2,3-Trichlorobenzene	50.0000		45.0380		-9.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		42.8390		-14.3	100.0	Q
1,1,1-Trichloroethane	0.4396	0.4268			-2.9	100.0	A
1,1,2-Trichloroethane	0.5936	0.5342			-10.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/21/2015 10:19

Lab File ID: 15042102.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3137			-5.3	100.0	A
Trichlorofluoromethane	0.5623	0.5087			-9.5	100.0	A
1,2,3-Trichloropropane	0.3120	0.2663			-14.7	100.0	A
1,2,4-Trimethylbenzene	50.0000		45.2897		-9.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0313		-7.9	100.0	L
Vinyl Acetate	50.0000		45.9016		-8.2	100.0	L
Vinyl Chloride	0.3904	0.3423			-12.3	20.0	A
o-Xylene	50.0000		42.8491		-14.3	100.0	L
mp-Xylene	100		90.8207		-9.2	100.0	L
4-Bromofluorobenzene	50.0000		44.5845		-10.8	100.0	L
Dibromofluoromethane	0.3368	0.2843			-15.6	100.0	A
1,2-Dichloroethane-d4	50.0000		46.4530		-7.1	100.0	L
Toluene-d8	2.5776	2.3032			-10.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-018

Lab File ID: 15042300.D BFB Injection Date: 4/23/2015

Instrument ID: ms15.i BFB Injection Time: 09:51

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.3
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	77.8
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	74.8 (96.1) 1
177	5.0 - 9.0% of mass 176	4.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042302.D	4/23/2015	11:17
2168253(MB)	2168253	15042305.D	4/23/2015	12:33
2168254(LCS)	2168254	15042306.D	4/23/2015	12:51
MRC-MW-11A-041715	2065944002	15042316.D	4/23/2015	15:44
MRC-MW-110A-041715	2065944003	15042322.D	4/23/2015	17:27
MRC-MW-110B-041715	2065944004	15042323.D	4/23/2015	17:44

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0239			-6.1	100.0	A
Acrolein	0.0469	0.0480			2.4	100.0	A
Acrylonitrile	0.1017	0.1029			1.2	100.0	A
Acetonitrile	0.0366	0.0330			-9.9	100.0	A
tert-Amyl Ethylether	50.0000		49.6704		-0.7	100.0	L
tert-Amyl methyl ether	50.0000		48.6696		-2.7	100.0	L
tert-Amyl Alcohol	250		192		-23.2	100.0	L
Benzene	1.2412	1.4017			12.9	100.0	A
Benzyl Chloride	50.0000		53.7271		7.5	100.0	Q
Bromobenzene	0.9020	1.0364			14.9	100.0	A
Bromochloromethane	0.1634	0.1771			8.4	100.0	A
Bromodichloromethane	0.3923	0.4460			13.7	100.0	A
Bromoform	50.0000		46.2155	0.100	-7.6	100.0	Q
Bromomethane	50.0000		66.9949		34.0	100.0	L
2-Butanone	0.0377	0.0315			-16.7	100.0	A
tert.- Butyl Alcohol	0.0248	0.0228			-8.1	100.0	A
tert-Butylbenzene	50.0000		53.4198		6.8	100.0	L
n-Butylbenzene	50.0000		54.1976		8.4	100.0	L
sec-Butylbenzene	50.0000		54.1201		8.2	100.0	L
Carbon Disulfide	0.6640	0.8077			21.6	100.0	A
Carbon Tetrachloride	0.3630	0.4237			16.7	100.0	A
Chloroacetonitrile	250		227		-9.1	100.0	Q
Chlorobenzene	2.1382	2.3641		0.300	10.6	100.0	A
1-Chlorobutane	0.3017	0.3414			13.2	100.0	A
Chlorodibromomethane	50.0000		46.6616		-6.7	100.0	L
Chloroethane	0.2386	0.2777			16.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0769			-40.1	100.0	A
Chloroform	50.0000		55.2796		10.6	20.0	Q
1-Chlorohexane	50.0000		51.9047		3.8	100.0	L
Chloromethane	0.5153	0.5281		0.100	2.5	100.0	A
Chloroprene	0.4077	0.4777			17.2	100.0	A
3-Chloro-1-propene	0.3143	0.4022			28.0	100.0	A
o-Chlorotoluene	50.0000		53.3696		6.7	100.0	L
p-Chlorotoluene	50.0000		53.7630		7.5	100.0	L
Cyclohexane	50.0000		53.8627		7.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1216			-5.2	100.0	A
1,2-Dibromoethane	0.6135	0.6351			3.5	100.0	A
Dibromomethane	0.1929	0.2000			3.7	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		48.1595		-3.7	100.0	L
1,2-Dichlorobenzene	1.6905	1.8718			10.7	100.0	A
1,3-Dichlorobenzene	1.7148	2.0030			16.8	100.0	A
1,4-Dichlorobenzene	1.8695	2.0376			9.0	100.0	A
Dichlorodifluoromethane	0.4406	0.5551			26.0	100.0	A
1,1-Dichloroethane	0.5657	0.6239		0.100	10.3	100.0	A
1,2-Dichloroethene, Total	100		114		13.8	100.0	L
1,2-Dichloroethane	0.4307	0.4435			3.0	100.0	A
1,1-Dichloroethene	0.3989	0.4351			9.1	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4510			11.6	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4502			16.0	100.0	A
Dichlorofluoromethane	0.5742	0.6201			8.0	100.0	A
1,1-Dichloro-2-Propanone	250		214		-14.4	100.0	L
2,2-Dichloropropane	0.3327	0.4180			25.6	100.0	A
1,3-Dichloropropane	1.1698	1.2213			4.4	100.0	A
1,2-Dichloropropane	0.3178	0.3513			10.5	20.0	A
1,1-Dichloropropene	0.3783	0.4353			15.1	100.0	A
cis-1,3-Dichloropropene	50.0000		49.5108		-1.0	100.0	L
trans-1,3-Dichloropropene	50.0000		49.4206		-1.2	100.0	L
1,3-Dichloropropene, Total	100		98.9314		-1.1	100.0	L
Diisobutylene	50.0000		56.5816		13.2	100.0	L
Diisopropyl ether	0.8443	0.9826			16.4	100.0	A
1,4-Dioxane	0.0033	0.0033			-1.3	100.0	A
Ethyl Acetate	0.2547	0.2417			-5.1	100.0	A
Ethyl ether	0.1901	0.1998			5.1	100.0	A
Ethyl Methacrylate	50.0000		44.9097		-10.2	100.0	L
Ethyl tert-butyl ether	50.0000		52.4469		4.9	100.0	L
Ethylbenzene	50.0000		53.5247		7.0	20.0	L
Freon 113	0.2737	0.2931			7.1	100.0	A
Heptane	50.0000		59.9886		20.0	100.0	L
Hexachlorobutadiene	0.4314	0.5619			30.2	100.0	A
Hexachloroethane	50.0000		48.7170		-2.6	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.5697			17.8	100.0	A
2-Hexanone	250		231		-7.4	100.0	L
Iodomethane	50.0000		77.3056		54.6	100.0	Q
Isobutyl alcohol	500		535		7.1	100.0	L
Isopropyl Alcohol	0.0167	0.0153			-8.8	100.0	A
Isopropylbenzene	50.0000		51.8856		3.8	100.0	L
p-Isopropyltoluene	50.0000		53.4014		6.8	100.0	L
Methyl acetate	0.0545	0.0493			-9.4	100.0	A
Methyl acrylate	50.0000		46.8987		-6.2	100.0	L
Methacrylonitrile	50.0000		49.4612		-1.1	100.0	L
Methyl cyclohexane	1.0036	1.2165			21.2	100.0	A
Methyl methacrylate	50.0000		44.9346		-10.1	100.0	L
Methyl t-Butyl Ether	0.7715	0.7911			2.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		242		-3.1	100.0	L
Methylene Chloride	50.0000		59.9564		19.9	100.0	Q
Naphthalene	50.0000		45.7422		-8.5	100.0	Q
Nitrobenzene	500		426		-14.8	100.0	Q
2-Nitropropane	250		222		-11.1	100.0	L
Octane	50.0000		69.6782		39.4	100.0	L
Pentachloroethane	0.6478	0.7077			9.2	100.0	A
Pentane	0.1681	0.1955			16.3	100.0	A
n-Propanol	0.0219	0.0217			-1.1	100.0	A
Propionitrile	0.0412	0.0384			-7.0	100.0	A
n-Propylbenzene	50.0000		53.7839		7.6	100.0	L
Styrene	50.0000		52.3186		4.6	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7776			12.4	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.9022		0.300	-7.3	100.0	A
Tetrachloroethene	0.6720	0.7333			9.1	100.0	A
Tetrahydrofuran	0.0755	0.0715			-5.4	100.0	A
Toluene	50.0000		53.7037		7.4	20.0	L
Total Xylenes	150		157		4.7	100.0	L
1,2,3-Trichlorobenzene	50.0000		50.4410		0.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		51.2571		2.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.5003			13.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5872			-1.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-018

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3685			11.3	100.0	A
Trichlorofluoromethane	0.5623	0.6239			11.0	100.0	A
1,2,3-Trichloropropane	0.3120	0.2846			-8.8	100.0	A
1,2,4-Trimethylbenzene	50.0000		53.0436		6.1	100.0	L
1,3,5-Trimethylbenzene	50.0000		54.0407		8.1	100.0	L
Vinyl Acetate	50.0000		51.8072		3.6	100.0	L
Vinyl Chloride	0.3904	0.4539			16.3	20.0	A
o-Xylene	50.0000		50.8720		1.7	100.0	L
mp-Xylene	100		106		6.3	100.0	L
4-Bromofluorobenzene	50.0000		44.4466		-11.1	100.0	L
Dibromofluoromethane	0.3368	0.2774			-17.6	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8549		-10.3	100.0	L
Toluene-d8	2.5776	2.3218			-9.9	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042119.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.53	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-041715

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-018

Matrix (soil/water): WATER Lab Sample ID: 2065944001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042119.D

Level (low/med): Date Received: 4/18/15

% Moisture: not dec. 100.0 Date Analyzed: 4/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	0.39	J
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2167682	82								0
02	2167683LCSLO	82								0
03	MRC-MW-11A-0	79								0
04	MRC-MW-11A-0	81								0
05	MRC-MW-11A-0	82								0
06	MRC-MW-110A-	80								0
07	MRC-MW-110B-	81								0
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042301 Time Analyzed: 1047

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	50167	6.35				
	UPPER LIMIT	65217	6.85				
	LOWER LIMIT	35117	5.85				
	SAMPLE NO.						
01	2167682	52174	6.36				
02	2167683LCSLO	52734	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 04/23/15

Lab File ID (Standard): 12042314 Time Analyzed: 1611

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	51222	6.35				
	UPPER LIMIT	66589	6.85				
	LOWER LIMIT	35855	5.85				
	SAMPLE NO.						
01	MRC-MW-11A-0	52781	6.36				
02	MRC-MW-11A-0	53946	6.36				
03	MRC-MW-11A-0	53790	6.36				
04	MRC-MW-110A-	51473	6.35				
05	MRC-MW-110B-	53690	6.36				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	56413	6.33				
UPPER LIMIT	73337	6.83				
LOWER LIMIT	39489	5.83				
SAMPLE NO.						
01 2ND-0.1	51755	6.36				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Lab File ID: 12042302 Lab Sample ID: 2167682

Instrument ID: MS12 Date Extracted: 04/22/15

Matrix: (soil/water) WATER Date Analyzed: 04/23/15

Level:(low/med) LOW Time Analyzed: 1112

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2167683LCSLO	2167683	12042303	04/23/15
02	MRC-MW-11A-0	2065944002	12042322	04/23/15
03	MRC-MW-11A-0	2167684	12042323	04/23/15
04	MRC-MW-11A-0	2167685	12042324	04/23/15
05	MRC-MW-110A-	2065944003	12042325	04/23/15
06	MRC-MW-110B-	2065944004	12042326	04/23/15
07				
08				
09				
10				
11				
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29				
30				

COMMENTS:

FORM IV SV

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2167682

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix: (soil/water) WATER Lab Sample ID: 2167682

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042302

Level: (low/med) LOW Date Received: 04/22/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/22/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/23/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix Spike - Sample No.: 2167683LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0631509	90	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix Spike - 2167684 Sample No.: MRC-MW-11A-041715(2065944002)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	4.28005	4.32007	57	50-150

Matrix Spike - 2167685 Sample No.: MRC-MW-11A-041715(2065944002)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,4-Dioxane	7.e-002	4.42321	205*	113*	50	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 1 outside limits
Spike Recovery: 1 out of 2 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
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29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	04/23/15	1047	8.36			
02	2167682	2167682	04/23/15	1112	8.36			
03	2167683LCSLO	2167683	04/23/15	1137	8.38			
04	MIDCHECK-5	MIDCHECK-5	04/23/15	1611	8.36			
05	MRC-MW-11A-0	2065944002	04/23/15	1939	8.36			
06	MRC-MW-11A-0	2167684	04/23/15	2004	8.36			
07	MRC-MW-11A-0	2167685	04/23/15	2029	8.36			
08	MRC-MW-110A-	2065944003	04/23/15	2054	8.36			
09	MRC-MW-110B-	2065944004	04/23/15	2120	8.38			
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 1047

Lab File ID: 12042301 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.39e-003	3.5e-003	1.0178812	0.00001	25.43	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6392250	0.6392250	0.00001	-10.22	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Instrument ID: MS12 Calibration Date: 04/23/15 Time: 1611

Lab File ID: 12042314 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.34e-002	5.e-002	1.4685206	0.00001	-13.20	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6390223	0.6390223	0.00001	-10.25	30.00	AVRG

FORM VII SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM018

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-018 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2065944002	MRC-MW-11A-041715	
2065944003	MRC-MW-110A-041715	
2065944004	MRC-MW-110B-041715	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2350																										
BLK	1.00	2353			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2357			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0001			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0004			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0008			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0011			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0015			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0018																										
ICB2	1.00	0022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0026			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0029			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0033			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0047																										
ZZZZZZ	1.00	0052																										
ZZZZZZ	1.00	0056																										
ZZZZZZ	1.00	0059																										
2166237	1.00	0103			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2166238	1.00	0106			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0110																										
ZZZZZZ	1.00	0113																										
ZZZZZZ	1.00	0117																										
ZZZZZZ	1.00	0121																										
ZZZZZZ	1.00	0124																										
ZZZZZZ	1.00	0128																										
CCV1	1.00	0132			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0135			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0139			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
ZZZZZZ	1.00	0150																										
ZZZZZZ	1.00	0153																										
ZZZZZZ	1.00	0157																										
ZZZZZZ	1.00	0201																										
ZZZZZZ	1.00	0204																										
ZZZZZZ	1.00	0208																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0211																										
ZZZZZZ	1.00	0215																										
ZZZZZZ	1.00	0219																										
ZZZZZZ	1.00	0222																										
ZZZZZZ	1.00	0226																										
ZZZZZZ	5.00	0230																										
ZZZZZZ	1.00	0233																										
ZZZZZZ	1.00	0237																										
ZZZZZZ	1.00	0240																										
ZZZZZZ	1.00	0244																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0251																										
ZZZZZZ	1.00	0255																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0302																										
ZZZZZZ	1.00	0306																										
ZZZZZZ	1.00	0309																										
ZZZZZZ	1.00	0313																										
ZZZZZZ	1.00	0317																										
ZZZZZZ	1.00	0320																										
ZZZZZZ	1.00	0324																										
ZZZZZZ	1.00	0327																										
ZZZZZZ	1.00	0331																										
ZZZZZZ	1.00	0335																										
ZZZZZZ	1.00	0338																										
ZZZZZZ	1.00	0342																										
ZZZZZZ	1.00	0346																										
ZZZZZZ	1.00	0349																										
ZZZZZZ	1.00	0353																										
CCV5	1.00	0356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	0400			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0404			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0407																										
2065944002	1.00	0411			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2065944003	1.00	0415			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2065944004	1.00	0418			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	10.00	0424																										
2065944003	10.00	0427															X											
CCV6	1.00	0431			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	0434			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:50																									
BLK	1.00	23:53					X																				
STANDARD 1	1.00	23:57					X																				
STANDARD 2	1.00	00:01					X																				
STANDARD 3	1.00	00:04					X																				
STANDARD 4	1.00	00:08					X																				
STANDARD 5	1.00	00:11					X																				
ICV	1.00	00:15					X																				
ZZZZZZ	1.00	00:18																									
ICB2	1.00	00:22					X																				
LLICV	1.00	00:26					X																				
ICS-A1	1.00	00:29					X																				
ICS-AB1	1.00	00:33					X																				
ZZZZZZ	1.00	00:47																									
ZZZZZZ	1.00	00:52																									
ZZZZZZ	1.00	00:56																									
ZZZZZZ	1.00	00:59																									
2166237	1.00	01:03					X																				
2166238	1.00	01:06					X																				
ZZZZZZ	1.00	01:10																									
ZZZZZZ	1.00	01:13																									
ZZZZZZ	1.00	01:17																									
ZZZZZZ	1.00	01:21																									
ZZZZZZ	1.00	01:24																									
ZZZZZZ	1.00	01:28																									
CCV1	1.00	01:32					X																				
CCB1	1.00	01:35					X																				
LLCCV	1.00	01:39					X																				
ZZZZZZ	1.00	01:42																									
ZZZZZZ	1.00	01:46																									
ZZZZZZ	1.00	01:50																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042115A 235

Start Date: 4/20/2015 End Date: 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes
ZZZZZZ	1.00	01:53		
ZZZZZZ	1.00	01:57		
ZZZZZZ	1.00	02:01		
ZZZZZZ	1.00	02:04		
ZZZZZZ	1.00	02:08		
ZZZZZZ	1.00	02:11		
ZZZZZZ	1.00	02:15		
ZZZZZZ	1.00	02:19		
ZZZZZZ	1.00	02:22		
ZZZZZZ	1.00	02:26		
ZZZZZZ	5.00	02:30		
ZZZZZZ	1.00	02:33		
ZZZZZZ	1.00	02:37		
ZZZZZZ	1.00	02:40		
ZZZZZZ	1.00	02:44		
ZZZZZZ	1.00	02:48		
ZZZZZZ	1.00	02:51		
ZZZZZZ	1.00	02:55		
ZZZZZZ	1.00	02:59		
ZZZZZZ	1.00	03:02		
ZZZZZZ	1.00	03:06		
ZZZZZZ	1.00	03:09		
ZZZZZZ	1.00	03:13		
ZZZZZZ	1.00	03:17		
ZZZZZZ	1.00	03:20		
ZZZZZZ	1.00	03:24		
ZZZZZZ	1.00	03:27		
ZZZZZZ	1.00	03:31		
ZZZZZZ	1.00	03:35		
ZZZZZZ	1.00	03:38		
ZZZZZZ	1.00	03:42		

Analytes: B, AU, LI, MO, OS, PD, P, PT, SI, S, SN, SR, TI, U, W, IN, TE, ZR

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM018|MRC GW 2015

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-018

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B042115A 235

Start Date: 4/20/2015 **End Date:** 4/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	03:46																										
ZZZZZZ	1.00	03:49																										
ZZZZZZ	1.00	03:53																										
CCV5	1.00	03:56					X																					
CCB4	1.00	04:00					X																					
LLCCV	1.00	04:04					X																					
ZZZZZZ	1.00	04:07																										
2065944002	1.00	04:11					X																					
2065944003	1.00	04:15					X																					
2065944004	1.00	04:18					X																					
ZZZZZZ	10.00	04:24																										
2065944003	10.00	04:27																										
CCV6	1.00	04:31					X																					
CCB5	1.00	04:34					X																					
LLCCV	1.00	04:38					X																					

6020 3015

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-018

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2350												
BLK	BLK	2353	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2357	99		101		101		99		105		103	
STANDARD 2	STANDARD 2	0001	101		102		103		102		106		103	
STANDARD 3	STANDARD 3	0004	101		101		104		102		102		102	
STANDARD 4	STANDARD 4	0008	100		101		103		101		106		104	
STANDARD 5	STANDARD 5	0011	104		105		106		105		109		105	
ICV	ICV	0015	101		99		103		102		104		102	
ICB1	ZZZZZZ	0018												
ICB2	ICB	0022	101		102		104		101		106		103	
LLICV	LLICV	0026	99		98		101		99		101		101	
ICS-A1	ICSA	0029	94		107		100		103		108		109	
ICS-AB1	ICSAB	0033	101		112		106		110		113		114	
CHECK	ZZZZZZ	0047												
CHECK	ZZZZZZ	0052												
2166233	ZZZZZZ	0056												
2166234	ZZZZZZ	0059												
2166237	MB for HBN 68265	0103	100		112		104		102		103		106	
2166238	LCS for HBN 6826	0106	102		126		106		105		111		113	
2065563001	ZZZZZZ	0110												
2065563002	ZZZZZZ	0113												
2065563003	ZZZZZZ	0117												
2065563004	ZZZZZZ	0121												
2065563005	ZZZZZZ	0124												
2065563006	ZZZZZZ	0128												
CCV1	CCV	0132	108		108		112		110		114		112	
CCB1	CCB	0135	111		116		114		110		116		112	
LLCCV	LLCCV	0139	107		106		110		107		115		109	
2065563007	ZZZZZZ	0142												
2065563008	ZZZZZZ	0146												
2065603006	ZZZZZZ	0150												
2065603007	ZZZZZZ	0153												
2065603008	ZZZZZZ	0157												
2065603009	ZZZZZZ	0201												
2166235	ZZZZZZ	0204												
2166236	ZZZZZZ	0208												
2065603010	ZZZZZZ	0211												
2065429001	ZZZZZZ	0215												
CCV2	ZZZZZZ	0219												
CCB2	ZZZZZZ	0222												
LLCCV	ZZZZZZ	0226												
2065429001L	ZZZZZZ	0230												
2065429002	ZZZZZZ	0233												
2065429003	ZZZZZZ	0237												

6020 3015

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-018

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2065429004	ZZZZZZ	0240												
2065429005	ZZZZZZ	0244												
2065429006	ZZZZZZ	0248												
2065429007	ZZZZZZ	0251												
2065429008	ZZZZZZ	0255												
2065612002	ZZZZZZ	0259												
2065612003	ZZZZZZ	0302												
CCV3	ZZZZZZ	0306												
CCB3	ZZZZZZ	0309												
LLCCV	ZZZZZZ	0313												
CCV4	ZZZZZZ	0317												
2065612004	ZZZZZZ	0320												
2065612004S	ZZZZZZ	0324												
2065612004S	ZZZZZZ	0327												
2065612006	ZZZZZZ	0331												
2065612007	ZZZZZZ	0335												
2065612008	ZZZZZZ	0338												
2065723001	ZZZZZZ	0342												
2065723002	ZZZZZZ	0346												
2065723003	ZZZZZZ	0349												
2065723004	ZZZZZZ	0353												
CCV5	CCV	0356	115		113		119		118		124		116	
CCB4	CCB	0400	115		119		118		118		123		116	
LLCCV	LLCCV	0404	118		116		119		119		122		115	
2065723005	ZZZZZZ	0407												
2065944002	MRC-MW-11A-04171	0411	105		128		112		115		117		116	
2065944003	MRC-MW-110A-0417	0415	100		124		106		110		115		112	
2065944004	MRC-MW-110B-0417	0418	94		128		102		113		119		113	
2065612008	ZZZZZZ	0424												
2065944003	MRC-MW-110A-0417	0427	107		111		111		113		118		111	
CCV6	CCV	0431	111		112		115		116		86		103	
CCB5	CCB	0434	111		112		114		114		119		113	
LLCCV	LLCCV	0438	112		112		115		115		120		114	

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-018

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2350												
BLK	2353	100											
STANDARD 1	2357	99											
STANDARD 2	0001	102											
STANDARD 3	0004	102											
STANDARD 4	0008	101											
STANDARD 5	0011	106											
ICV	0015	102											
ZZZZZZ	0018												
ICB	0022	102											
LLICV	0026	100											
ICSA	0029	104											
ICSAB	0033	109											
ZZZZZZ	0047												
ZZZZZZ	0052												
ZZZZZZ	0056												
ZZZZZZ	0059												
MB for HBN 68265	0103	104											
LCS for HBN 6826	0106	106											
ZZZZZZ	0110												
ZZZZZZ	0113												
ZZZZZZ	0117												
ZZZZZZ	0121												
ZZZZZZ	0124												
ZZZZZZ	0128												
CCV	0132	109											
CCB	0135	112											
LLCCV	0139	109											
ZZZZZZ	0142												
ZZZZZZ	0146												
ZZZZZZ	0150												
ZZZZZZ	0153												
ZZZZZZ	0157												
ZZZZZZ	0201												
ZZZZZZ	0204												
ZZZZZZ	0208												
ZZZZZZ	0211												
ZZZZZZ	0215												
ZZZZZZ	0219												
ZZZZZZ	0222												
ZZZZZZ	0226												
ZZZZZZ	0230												
ZZZZZZ	0233												
ZZZZZZ	0237												
ZZZZZZ	0240												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-018

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/20/2015 End Date: 04/21/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0244												
ZZZZZZ	0248												
ZZZZZZ	0251												
ZZZZZZ	0255												
ZZZZZZ	0259												
ZZZZZZ	0302												
ZZZZZZ	0306												
ZZZZZZ	0309												
ZZZZZZ	0313												
ZZZZZZ	0317												
ZZZZZZ	0320												
ZZZZZZ	0324												
ZZZZZZ	0327												
ZZZZZZ	0331												
ZZZZZZ	0335												
ZZZZZZ	0338												
ZZZZZZ	0342												
ZZZZZZ	0346												
ZZZZZZ	0349												
ZZZZZZ	0353												
CCV	0356	116											
CCB	0400	118											
LLCCV	0404	118											
ZZZZZZ	0407												
MRC-MW-11A-04171	0411	114											
MRC-MW-110A-0417	0415	110											
MRC-MW-110B-0417	0418	105											
ZZZZZZ	0424												
MRC-MW-110A-0417	0427	109											
CCV	0431	114											
CCB	0434	113											
LLCCV	0438	114											

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1012	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Arsenic	0.0991	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Barium	0.0983	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Beryllium	0.0987	0.1000	99		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cadmium	0.0985	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Chromium	0.1005	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Cobalt	0.1001	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Copper	0.1002	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Lead	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Manganese	0.0998	0.1000	100		90 - 110	M	4/21/2015	00:15	B042115A 2
	Molybdenum	0.1007	0.1000	101		90 - 110	M	4/21/2015	00:15	B042115A 2
	Nickel	0.0952	0.1000	95		90 - 110	M	4/21/2015	00:15	B042115A 2
	Selenium	0.0974	0.1000	97		90 - 110	M	4/21/2015	00:15	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Thallium	0.0977	0.1000	98		90 - 110	M	4/21/2015	00:15	B042115A 2
	Vanadium	0.1016	0.1000	102		90 - 110	M	4/21/2015	00:15	B042115A 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	00:26	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	00:26	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/21/2015	00:26	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Copper	0.0050	0.0050	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	00:26	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	00:26	B042115A 2
	Selenium	0.0048	0.0050	96		70 - 130	M	4/21/2015	00:26	B042115A 2
	Silver	0.0021	0.0020	105		70 - 130	M	4/21/2015	00:26	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	00:26	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	00:26	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1007	0.1000	101		90 - 110	M	4/21/2015	01:32	B042115A 2
	Arsenic	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Barium	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Beryllium	0.0925	0.1000	92		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cadmium	0.0977	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Chromium	0.1000	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Cobalt	0.0979	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Copper	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Lead	0.1004	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
	Manganese	0.0991	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Molybdenum	0.0990	0.1000	99		90 - 110	M	4/21/2015	01:32	B042115A 2
	Nickel	0.0947	0.1000	95		90 - 110	M	4/21/2015	01:32	B042115A 2
	Selenium	0.0944	0.1000	94		90 - 110	M	4/21/2015	01:32	B042115A 2
	Silver	0.0984	0.1000	98		90 - 110	M	4/21/2015	01:32	B042115A 2
	Thallium	0.0971	0.1000	97		90 - 110	M	4/21/2015	01:32	B042115A 2
	Vanadium	0.1002	0.1000	100		90 - 110	M	4/21/2015	01:32	B042115A 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Barium	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Copper	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	01:39	B042115A 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2
	Nickel	0.0049	0.0050	98		70 - 130	M	4/21/2015	01:39	B042115A 2
	Selenium	0.0047	0.0050	94		70 - 130	M	4/21/2015	01:39	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	01:39	B042115A 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	4/21/2015	01:39	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0974	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Arsenic	0.0980	0.1000	98		90 - 110	M	4/21/2015	03:56	B042115A 2
	Barium	0.0945	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Beryllium	0.0914	0.1000	91		90 - 110	M	4/21/2015	03:56	B042115A 2
	Cadmium	0.0940	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Chromium	0.0971	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Cobalt	0.0957	0.1000	96		90 - 110	M	4/21/2015	03:56	B042115A 2
	Copper	0.0967	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Lead	0.0969	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Manganese	0.0969	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Molybdenum	0.0971	0.1000	97		90 - 110	M	4/21/2015	03:56	B042115A 2
	Nickel	0.0912	0.1000	91		90 - 110	M	4/21/2015	03:56	B042115A 2
	Selenium	0.0944	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Silver	0.0961	0.1000	96		90 - 110	M	4/21/2015	03:56	B042115A 2
	Thallium	0.0940	0.1000	94		90 - 110	M	4/21/2015	03:56	B042115A 2
	Vanadium	0.0978	0.1000	98		90 - 110	M	4/21/2015	03:56	B042115A 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/21/2015	04:04	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:04	B042115A 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/21/2015	04:04	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Chromium	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:04	B042115A 2
	Copper	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:04	B042115A 2
	Lead	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2
	Manganese	0.0051	0.0050	102		70 - 130	M	4/21/2015	04:04	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Nickel	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:04	B042115A 2
	Selenium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:04	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:04	B042115A 2
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:04	B042115A 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0991	0.1000	99		90 - 110	M	4/21/2015	04:31	B042115A 2
	Arsenic	0.1084	0.1000	108		90 - 110	M	4/21/2015	04:31	B042115A 2
	Barium	0.0961	0.1000	96		90 - 110	M	4/21/2015	04:31	B042115A 2
	Beryllium	0.0924	0.1000	92		90 - 110	M	4/21/2015	04:31	B042115A 2
	Cadmium	0.0951	0.1000	95		90 - 110	M	4/21/2015	04:31	B042115A 2
	Chromium	0.0985	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Cobalt	0.0963	0.1000	96		90 - 110	M	4/21/2015	04:31	B042115A 2
	Copper	0.0966	0.1000	97		90 - 110	M	4/21/2015	04:31	B042115A 2
	Lead	0.0998	0.1000	100		90 - 110	M	4/21/2015	04:31	B042115A 2
	Manganese	0.0976	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Molybdenum	0.0985	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Nickel	0.0919	0.1000	92		90 - 110	M	4/21/2015	04:31	B042115A 2
	Selenium	0.1055	0.1000	106		90 - 110	M	4/21/2015	04:31	B042115A 2
	Silver	0.0980	0.1000	98		90 - 110	M	4/21/2015	04:31	B042115A 2
	Thallium	0.0966	0.1000	97		90 - 110	M	4/21/2015	04:31	B042115A 2
	Vanadium	0.0988	0.1000	99		90 - 110	M	4/21/2015	04:31	B042115A 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/21/2015	04:38	B042115A 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Barium	0.0049	0.0050	98		70 - 130	M	4/21/2015	04:38	B042115A 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Chromium	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/21/2015	04:38	B042115A 2
	Copper	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:38	B042115A 2
	Lead	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Manganese	0.0050	0.0050	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Nickel	0.0047	0.0050	94		70 - 130	M	4/21/2015	04:38	B042115A 2
	Selenium	0.0055	0.0050	110		70 - 130	M	4/21/2015	04:38	B042115A 2
	Silver	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Thallium	0.0010	0.0010	100		70 - 130	M	4/21/2015	04:38	B042115A 2
	Vanadium	0.0020	0.0020	100		70 - 130	M	4/21/2015	04:38	B042115A 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	00:22	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	00:22	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	00:22	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	00:22	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	00:22	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	00:22	B042115A 235
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	01:35	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	01:35	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	01:35	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	01:35	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	01:35	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	01:35	B042115A 235

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	04:00	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	04:00	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	04:00	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:00	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	04:00	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:00	B042115A 235

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/21/2015	04:34	B042115A 235
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/21/2015	04:34	B042115A 235
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/21/2015	04:34	B042115A 235
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/21/2015	04:34	B042115A 235
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/21/2015	04:34	B042115A 235
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/21/2015	04:34	B042115A 235

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Arsenic	0.0003				-0.00300 - -0.00300	4/21/2015	00:29	B042115A 23
	Barium	0.0004				-0.01000 - -0.01000	4/21/2015	00:29	B042115A 23
	Beryllium	0.00001				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Cadmium	0.0010				-0.00100 - -0.00100	4/21/2015	00:29	B042115A 23
	Chromium	0.0006				-0.00400 - -0.00400	4/21/2015	00:29	B042115A 23
	Cobalt	0.0006				-0.00600 - -0.00600	4/21/2015	00:29	B042115A 23
	Copper	0.0011				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Lead	0.0001				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Manganese	0.0013				-0.01000 - -0.01000	4/21/2015	00:29	B042115A 23
	Molybdenum	1.9387	2.00000	97		80 - 120%	4/21/2015	00:29	B042115A 23
	Nickel	0.0008				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Selenium	0.0000				-0.00500 - -0.00500	4/21/2015	00:29	B042115A 23
	Silver	0.0004				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
	Thallium	0.00002				-0.001000 - -0.001000	4/21/2015	00:29	B042115A 23
	Vanadium	0.0002				-0.00200 - -0.00200	4/21/2015	00:29	B042115A 23
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Arsenic	0.0204	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Barium	0.0003				-0.00500 - -0.00500	4/21/2015	00:33	B042115A 23
	Beryllium	0.00002				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Cadmium	0.0104	0.01000	104		80 - 120%	4/21/2015	00:33	B042115A 23
	Chromium	0.0196	0.02000	98		80 - 120%	4/21/2015	00:33	B042115A 23
	Cobalt	0.0382	0.04000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Copper	0.0192	0.02000	96		80 - 120%	4/21/2015	00:33	B042115A 23
	Lead	0.0002				-0.00200 - -0.00200	4/21/2015	00:33	B042115A 23
	Manganese	0.0203	0.02000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Molybdenum	2.0480	2.00000	102		80 - 120%	4/21/2015	00:33	B042115A 23
	Nickel	0.0353	0.04000	88		80 - 120%	4/21/2015	00:33	B042115A 23
	Selenium	0.0186	0.02000	93		80 - 120%	4/21/2015	00:33	B042115A 23
	Silver	0.0198	0.02000	99		80 - 120%	4/21/2015	00:33	B042115A 23
	Thallium	0.00001				-0.001000 - -0.001000	4/21/2015	00:33	B042115A 23
	Vanadium	0.0422	0.04000	106		80 - 120%	4/21/2015	00:33	B042115A 23

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68265						
2166237	MB for HBN 68265 [MDIG/50421	MB	QC-WAT	4/20/15	45.0	50.0	
2166238	LCS for HBN 68265 [MDIG/50421	LCS	QC-WAT	4/20/15	45.0	50.0	
2065944002	MRC-MW-11A-041715	SAM	WATER	4/20/15	45.0	50.0	
2065944003	MRC-MW-110A-041715	SAM	WATER	4/20/15	45.0	50.0	
2065944004	MRC-MW-110B-041715	SAM	WATER	4/20/15	45.0	50.0	

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2166237			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	4/21/2015	01:03	B042115A 2350
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	4/21/2015	01:03	B042115A 2350
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	4/21/2015	01:03	B042115A 2350
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Molybdenum	0.00075	J		0.0022	0.00067	0.00222	M	4/21/2015	01:03	B042115A 2350
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	4/21/2015	01:03	B042115A 2350
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	4/21/2015	01:03	B042115A 2350
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	4/21/2015	01:03	B042115A 2350

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2166238									
	Antimony	mg/L	0.2220	0.2314		104		80 - 120	M
	Arsenic	mg/L	0.2220	0.2116		95		80 - 120	M
	Barium	mg/L	2.2220	2.3665		107		80 - 120	M
	Beryllium	mg/L	0.2220	0.2293		103		80 - 120	M
	Cadmium	mg/L	0.2220	0.2303		104		80 - 120	M
	Chromium	mg/L	0.2220	0.2345		106		80 - 120	M
	Cobalt	mg/L	0.2220	0.2327		105		80 - 120	M
	Copper	mg/L	0.2220	0.2280		103		80 - 120	M
	Lead	mg/L	0.2220	0.2396		108		80 - 120	M
	Manganese	mg/L	0.2220	0.2384		107		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2372		107		80 - 120	M
	Nickel	mg/L	0.2220	0.2329		105		80 - 120	M
	Selenium	mg/L	0.2220	0.1958		88		80 - 120	M
	Silver	mg/L	0.1110	0.1224		110		80 - 120	M
	Thallium	mg/L	0.2220	0.2322		105		80 - 120	M
	Vanadium	mg/L	0.2220	0.2367		107		80 - 120	M

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INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-018 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2065944002	MRC-MW-11A-041715	
2065944003	MRC-MW-110A-041715	
2065944004	MRC-MW-110B-041715	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0846												X													
ICAL2	1.00	0849												X													
ICAL3	1.00	0852												X													
ICAL4	1.00	0855												X													
ICAL5	1.00	0858												X													
ICV1	1.00	0901												X													
ICB1	1.00	0904												X													
CRDL1	1.00	0910												X													
CCV1	1.00	0914												X													
HIGH	1.00	0917												X													
ICS-A1	1.00	0920												X													
ICS-AB1	1.00	0923												X													
2167004	1.00	0931												X													
2167005	1.00	0934												X													
ZZZZZZ	5.00	0937																									
ZZZZZZ	5.00	0940																									
ZZZZZZ	5.00	0943																									
ZZZZZZ	5.00	0946																									
ZZZZZZ	5.00	0950																									
ZZZZZZ	5.00	0953																									
2065944002	1.00	0956												X													
2065944003	1.00	0959												X													
CCV2	1.00	1002												X													
CCB1	1.00	1005												X													
2065944004	2.00	1008												X													
ZZZZZZ	1.00	1011																									
ZZZZZZ	1.00	1014																									
ZZZZZZ	1.00	1018																									
ZZZZZZ	5.00	1021																									
ZZZZZZ	5.00	1024																									
ZZZZZZ	5.00	1027																									
ZZZZZZ	5.00	1030																									
ZZZZZZ	5.00	1034																									
ZZZZZZ	5.00	1037																									
CCV3	1.00	1040												X													
CCB2	1.00	1043												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1046																								
ZZZZZZ	1.00	1049																								
ZZZZZZ	1.00	1052																								
ZZZZZZ	1.00	1056																								
ZZZZZZ	5.00	1059																								
ZZZZZZ	5.00	1102																								
ZZZZZZ	5.00	1105																								
ZZZZZZ	5.00	1108																								
ZZZZZZ	5.00	1112																								
ZZZZZZ	5.00	1115																								
ZZZZZZ	1.00	1118																								
ZZZZZZ	1.00	1121																								
ZZZZZZ	5.00	1124																								
ZZZZZZ	5.00	1127																								
ZZZZZZ	5.00	1130																								
ZZZZZZ	5.00	1133																								
ZZZZZZ	5.00	1137																								
ZZZZZZ	1.00	1140																								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1146																								
ZZZZZZ	1.00	1149																								
ZZZZZZ	5.00	1153																								
ZZZZZZ	1.00	1156																								
ZZZZZZ	1.00	1159																								
ZZZZZZ	1.00	1203																								
ZZZZZZ	1.00	1207																								
ZZZZZZ	1.00	1210																								
ZZZZZZ	5.00	1213																								
ZZZZZZ	5.00	1216																								
ZZZZZZ	5.00	1219																								
ZZZZZZ	5.00	1222																								
ZZZZZZ	1.00	1225																								
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1231																								
ZZZZZZ	1.00	1234																								
ZZZZZZ	1.00	1237																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1240																										
ZZZZZZ	1.00	1243																										
ZZZZZZ	1.00	1246																										
ZZZZZZ	1.00	1250																										
CCV7	1.00	1256												X														
CCB7	1.00	1259												X														
LLCCV	1.00	1302												X														
ICS-A2	1.00	1305												X														
ICS-AB2	1.00	1308												X														
ZZZZZZ	1.00	1350																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	1.00	1357																										
ZZZZZZ	1.00	1400																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1409																										
ZZZZZZ	1.00	1412																										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	1.00	1425																										
ZZZZZZ	1.00	1428																										
ZZZZZZ	1.00	1431																										
ZZZZZZ	1.00	1434																										
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1450																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1513																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1519																								
ZZZZZZ	1.00	1522																								
ZZZZZZ	5.00	1525																								
ZZZZZZ	5.00	1528																								
ZZZZZZ	25.00	1532																								
ZZZZZZ	5.00	1535																								
ZZZZZZ	5.00	1538																								
ZZZZZZ	5.00	1541																								
ZZZZZZ	5.00	1545																								
ZZZZZZ	1.00	1548																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1557																								
ZZZZZZ	1.00	1600																								
ZZZZZZ	1.00	1604																								
ZZZZZZ	1.00	1607																								

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.003	1.000	100		90 - 110	P	4/22/2015	09:01	042215A 30
CCV	Iron	2.532	2.500	101		90 - 110	P	4/22/2015	09:14	042215A 30
CCV	Iron	2.522	2.500	101		90 - 110	P	4/22/2015	10:02	042215A 30
CCV	Iron	2.440	2.500	98		90 - 110	P	4/22/2015	10:40	042215A 30
CCV	Iron	2.608	2.500	104		90 - 110	P	4/22/2015	12:56	042215A 30
LLCCV	Iron	0.070	0.060	117		70 - 130	P	4/22/2015	13:02	042215A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.058	0.060	97		70 - 130	P	4/22/2015	09:10	042215A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	09:04	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	10:05	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	10:43	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	12:59	042215A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	114.1	125.0	91		80 - 120%	4/22/2015	09:20	042215A 3015
ICSAB									
	Iron	115.9	125.0	93		80 - 120%	4/22/2015	09:23	042215A 3015
ICSA									
	Iron	121.1	125.0	97		80 - 120%	4/22/2015	13:05	042215A 3015
ICSAB									
	Iron	124.9	125.0	100		80 - 120%	4/22/2015	13:08	042215A 3015

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68515						
2167004	MB for HBN 68515 [MDIG/50455	MB	QC-WAT	4/21/15	45.0	50.0	
2167005	LCS for HBN 68515 [MDIG/50455	LCS	QC-WAT	4/21/15	45.0	50.0	
2065944002	MRC-MW-11A-041715	SAM	WATER	4/21/15	45.0	50.0	
2065944003	MRC-MW-110A-041715	SAM	WATER	4/21/15	45.0	50.0	
2065944004	MRC-MW-110B-041715	SAM	WATER	4/21/15	45.0	50.0	

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2167004			**QC-WATER**								
	Iron	0.029	J		0.067	0.022	0.067	P	4/22/2015	09:31	042215A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2167005									
	Iron	mg/L	1.11	1.174		106		80 - 120	P

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-018 Method Type: 7470A SOW No.:

Contract: TMM018|MRC GW 2015 Lab Code: CAS Case No.: SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2065944002	MRC-MW-11A-041715	
2065944003	MRC-MW-110A-041715	
2065944004	MRC-MW-110B-041715	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1205																X												
Standard #1 (0.2ppb	1.00	1206																X												
	1.00	1207																X												
	1.00	1208																X												
	1.00	1209																X												
	1.00	1210																X												
ICV1	1.00	1212																X												
ICV2	1.00	1214																X												
ICB1	1.00	1215																X												
ZZZZZZ	1.00	1216																												
ZZZZZZ	1.00	1217																												
ZZZZZZ	1.00	1218																												
ZZZZZZ	1.00	1219																												
ZZZZZZ	1.00	1220																												
ZZZZZZ	1.00	1221																												
ZZZZZZ	1.00	1222																												
ZZZZZZ	1.00	1223																												
ZZZZZZ	1.00	1224																												
ZZZZZZ	1.00	1225																												
ZZZZZZ	1.00	1226																												
ZZZZZZ	1.00	1227																												
ZZZZZZ	1.00	1228																												
ZZZZZZ	1.00	1229																												
ZZZZZZ	1.00	1230																												
ZZZZZZ	1.00	1232																												
ZZZZZZ	1.00	1233																												
ZZZZZZ	1.00	1234																												
ZZZZZZ	1.00	1235																												
ZZZZZZ	1.00	1236																												
ZZZZZZ	1.00	1237																												
ZZZZZZ	1.00	1238																												
ZZZZZZ	1.00	1239																												
ZZZZZZ	1.00	1240																												
ZZZZZZ	1.00	1241																												
ZZZZZZ	1.00	1242																												
ZZZZZZ	1.00	1243																												

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1244																										
ZZZZZZ	1.00	1245																										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1248																										
ZZZZZZ	1.00	1249																										
ZZZZZZ	1.00	1250																										
ZZZZZZ	1.00	1251																										
ZZZZZZ	1.00	1252																										
ZZZZZZ	1.00	1253																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1255																										
ZZZZZZ	1.00	1256																										
ZZZZZZ	1.00	1257																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1300																										
ZZZZZZ	1.00	1301																										
ZZZZZZ	1.00	1302																										
ZZZZZZ	1.00	1303																										
ZZZZZZ	1.00	1304																										
ZZZZZZ	1.00	1305																										
ZZZZZZ	1.00	1306																										
ZZZZZZ	1.00	1307																										
ZZZZZZ	1.00	1308																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1310																										
ZZZZZZ	1.00	1312																										
ZZZZZZ	1.00	1313																										
ZZZZZZ	1.00	1314																										
ZZZZZZ	1.00	1315																										
ZZZZZZ	1.00	1316																										
CCV5	1.00	1325																X										
CCB5	1.00	1326																X										
2168200	1.00	1327																X										
2168201	1.00	1328																X										
ZZZZZZ	1.00	1329																										
ZZZZZZ	1.00	1331																										

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1332																X									
CCB6	1.00	1333																X									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1344																									
CCV7	1.00	1345																X									
CCB7	1.00	1346																X									
2065944002	1.00	1347																X									
2065944003	1.00	1348																X									
2065944004	1.00	1349																X									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
CCV8	1.00	1358																X									
CCB8	1.00	1359																X									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM018|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-018

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1416																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1440																									

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0037	0.004	92		90 - 110	CV	4/23/2015	12:12	042315W
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	12:14	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:25	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:32	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:45	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:58	042315W

7470A
- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	12:15	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:26	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:33	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:46	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:59	042315W

7470A
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Method:** CV

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68924						
2168200	MB for HBN 68924 [MDIG/50496	MB	QC-WAT	4/23/15	25.0	25.0	
2168201	LCS for HBN 68924 [MDIG/50496	LCS	QC-WAT	4/23/15	25.0	25.0	
2065944002	MRC-MW-11A-041715	SAM	WATER	4/23/15	25.0	25.0	
2065944003	MRC-MW-110A-041715	SAM	WATER	4/23/15	25.0	25.0	
2065944004	MRC-MW-110B-041715	SAM	WATER	4/23/15	25.0	25.0	

7470A
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2168200			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/23/2015	13:27	042315W

7470A
- 7 -
LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-018

Contract: TMM018|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2168201									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

W 1511256

14348/#1

Analytical Laboratory Services, Inc.

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 1511256 | 1 of 1

ALSI Quote #:

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT ☐ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [x] -Y ALMDT.Subcontract@alsglobal.com

Fax? ☐ -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)									Sample/COC Comments
								Enter Number of Containers Per Sample or Field Results Below.									
2065944 003	4/17/15	1125	C	GW				X									Subcontract: ALS Salt Lake City
2065944 004	4/17/15	1240	C	GW				X									
																	Level IV Package Needed
																	TetraTech EDD also required

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?		
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time)

Reviewed By (initials/date/time)

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	4/21/15	1630	2	04/22/15	0815
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐ Standard; [x] CLP-like; ☐ USACE; ☐

Special Processing: USACE ☐ Navy ☐ DOD ☐

State Samples Collected In: ☐ NY ☐ NJ ☐ PA ☐ NC ☐

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab ☐ Special ☐

EDDS: Format Type: ADR/SEDD

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) 1511256

Client Name: ALS Middletown

Project/Task/Site: PO 2065944

Date/Time of Receipt: 04/22/15 09:57

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 C017	3 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: [signature] (Signature) Thomas Carlson (Printed Name) 04/22/2015 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ No ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511256; 1511257; 1511258; 1211437; 1511439

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1562 (147840)

General Set Information: There were ten field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 444330) was less than 1/2 the CRDL. The recovery for the LCS (444331) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511256001. The percent recoveries were outside of performance limits. The relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APR15C-02/03/11/20.

Thomas Bosch — April 29, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Report Date: April 29, 2015

Debra Musser
ALS Environmental- Middletown
34 Dogwood Lane
Middletown, PA 17057

Phone: 717 944-5541 x 3162

E-mail: Debra.musser@alsglobal.com

Workorder: **34-1511256**
Project ID: 2065944
Purchase Order: 2065944

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
2065944 003	1511256001	04/17/15	04/22/15	
2065944 004	1511256002	04/17/15	04/22/15	

ANALYTICAL REPORT

Workorder: 34-1511256
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

ALS Work Order #'s & Sample #( )'s: 1511256 (001,02); 1511257 (001); 1511258 (001-04); 1511437 (001-02); 1511439 (001)
ELMS Batch/HBN ID: 1562 (147840)
Prep Date: 04/28/2015 Analysis Date: 04/28/2015 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence:\\HPCHEM\1\SEQUENCE\CLO4\2015\APR\28APR15P.s
Instrument MDL: **0.06µg/L** Reported PQL: **0.2µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 27894. Dilutions of Working Standard Solution ID 27896 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 08/14/2014, sequence 14AUG14P.s Offline Quantitation Method: CLO4OFF1.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89. Tuned: 8/14/2014 Tune Checked: 8/14/2014
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 2 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 85% Eluent A1; 15% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.52
4.0	0.52
5.0	0.25
14.5	0.25
15.0	0.52
17.5	0.52

QC DATA: 5.0µL of QC Solution Horizon ID 27897 was used for LCS 444331; Target = 5.0µg/L. ASTM type II water was used for LMB 444330.

MS/MSD: MS/MSD was performed on sample 1511256001 (Client ID: 2065944 003). 5.0µl of Working Standard Solution Horizon ID 27895 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335). The ion ratio of m/z 83 to 85 often fails at levels near or below the Limit of Detection (LODV). The ion ratio failed for the LODV's-1,2 (444328/335) and field samples 1511256002 and 1511257001.
3) Sample data can be viewed at two directories within the ALS system: \ALSLTWS013\DataReview\HBN# or throughNuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, many of the chromatographic peaks require manual integration. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APRC-02/03/11/20.

Batch Worklist

Batch: ELMS/ 1562 Created: 4/28/2015 13:02 Instrument: HBN: 147840

Rule: EPA 6850, Water Analyst: T. Bosch Status: WP

Workorder: 1511256
Workorder: 1511257
Workorder: 1511258
Workorder: 1511437
Workorder: 1511439

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	444326	CCV for HBN 147840 [ELMS/1562]				CCV	3		E6850..C3Q	5311		5/6/2015	
2	444327	RLVS for HBN 147840 [ELMS/1562				RLVS	3		E6850..C3Q	5311		5/6/2015	
3	444328	LODV for HBN 147840 [ELMS/1562				LODV	3		E6850..C3Q	5311		5/6/2015	
4	444329	ICS for HBN 147840 [ELMS/1562]				ICS	3		E6850..C3Q	5311		5/6/2015	
5	444330	LMB for HBN 147840 [ELMS/1562]				LMB	3		E6850...3Q	5311		5/6/2015	
6	444331	LCS for HBN 147840 [ELMS/1562]				LCS	3		E6850...3Q	5311		5/6/2015	
7	1511256001	2065944 003				SAMPLE	3	1511256001-A	E6850....3	5480	5/15/2015	5/6/2015	
8	444332	2065944 003(1511256001MS)				MS	3		E6850...3Q	5311		5/6/2015	
9	444333	2065944 003(1511256001MSD)				MSD	3		E6850...3Q	5311		5/6/2015	
10	1511256002	2065944 004				SAMPLE	3	1511256002-A	E6850....3	5480	5/15/2015	5/6/2015	
11	1511257001	2065603 011				SAMPLE	3	1511257001-A	E6850....3	5480	5/13/2015	5/6/2015	
12	1511258001	2065612 001				SAMPLE	3	1511258001-A	E6850....3	5480	5/14/2015	5/6/2015	
13	1511258002	2065612 006				SAMPLE	3	1511258002-A	E6850....3	5480	5/14/2015	5/6/2015	
14	1511258003	2065612 007				SAMPLE	3	1511258003-A	E6850....3	5480	5/14/2015	5/6/2015	
15	1511258004	2065612 008				SAMPLE	3	1511258004-A	E6850....3	5480	5/14/2015	5/6/2015	
16	1511437001	2066604 004				SAMPLE	3	1511437001-A	E6850....3	5480	5/20/2015	5/8/2015	
17	1511437002	2066604 005				SAMPLE	3	1511437002-A	E6850....3	5480	5/20/2015	5/8/2015	
18	1511439001	2066115 004				SAMPLE	3	1511439001-A	E6850....3	5480	5/18/2015	5/8/2015	
19	444334	CCV for HBN 147840 [ELMS/1562]				CCV	3		E6850..C3Q	5311		5/6/2015	
20	444335	LODV for HBN 147840 [ELMS/1562				LODV	3		E6850..C3Q	5311		5/6/2015	

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511256

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 444330
Analyzed: 04/28/2015 14:25

Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 444331
Analyzed: 04/28/2015 14:46
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1511256001	**MS:**	444332				**MSD:**	444333			
Analyzed:	04/28/2015 15:05	**Analyzed:**	04/28/2015 15:24				**Analyzed:**	04/28/2015 15:43			
Dilution:	1	**Dilution:**	1				**Dilution:**	1			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Perchlorate	0.800	4.62	5	* 76.4	85.3	112.8	4.74	78.9	2.57	0.0	20.0

PARENT SAMPLE:
MRC-MW-110A-041715

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511256

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	444326			**CCV:**	444334		
Analyzed:	04/28/2015 13:09			**Analyzed:**	04/28/2015 18:53		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 15%			**Criteria:**	± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	
Perchlorate	26.0	25.0	104	24.6	25.0	98.4	

Interference Check Sample

ICSA:	444329		
Analyzed:	04/28/2015 14:06		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	444328			**LODV:**	444335		
Analyzed:	04/28/2015 13:47			**Analyzed:**	04/28/2015 19:12		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 50%			**Criteria:**	± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**		**% Rec.**
Perchlorate	0.145	0.100	145	0.163	0.100	*	163

Comments

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect.
The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	4/29/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JUNE 16, 2015**

FROM: **MICHELLE L. ALLEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC & INORGANIC DATA VALIDATION – VOC/1,4-DIOXANE/METALS/ PERCHLORATE**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) GROUNDWATER SAMPLING
SDG 2066115R

SAMPLES: 4/Aqueous/VOC

MRC-MW-102A-042015 MRC-MW-102B-042015 MRC-MW-10A-042015 TB-042015

1/Aqueous/1,4-Dioxane

MRC-MW-10A-042015

3/Aqueous/Metals

MRC-MW-102B-042015 MRC-MW-10A-042015 MRC-MW-52A-042015

1/Aqueous/Perchlorate

MRC-MW-52A-042015

Overview

The sample set for LMC-MRC, SDG 2066115R consisted of four (4) aqueous environmental samples and one (1) trip blank. Three (3) aqueous environmental samples and the one (1) trip blank were analyzed for Volatile Organic Compounds (VOC). One (1) aqueous environmental sample were analyzed for 1,4-dioxane. Three (3) aqueous environmental samples were analyzed for metals. One (1) aqueous environmental sample was analyzed for perchlorate. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 20, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6010C, 6020A, 7470A, and 6850, and EPA Method 522 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, Interference Check Sample (ICS) results, laboratory method/preparation and trip blank results, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, internal standard areas, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- The VOC initial and continuing calibrations performed on instrument ms15.i had Relative Response Factors (RRFs) for 1,4-dioxane below the 0.005 minimum response criterion. All VOC samples were affected. The non-detected results reported for this compound in the affected samples were qualified as rejected, (UR).

Minor

- The VOC continuing calibration performed on 04/23/15 @ 11:17 had a Percent Drift (%Drift) for bromomethane and Percent Differences (%Ds) for carbon disulfide, dichlorodifluoromethane, and methyl cyclohexane which exceeded the 20% quality control limit. Samples MRC-MW-102A-042015 and MRC-MW-102B-042015 were affected. No action was taken for bromomethane because the detected results were qualified for laboratory blank contamination. The detected and non-detected results reported for the remaining compounds in the affected samples were qualified as estimated, (J) and (UJ), respectively.

- The closing Limit of Detection Verification (LODV) for perchlorate exceeded the ± 50% quality control criteria. The non-detected result reported for perchlorate in the affected sample, MRC-MW-52A-042015, was qualified as estimated, (UJ).

- The VOC Laboratory Control Sample (LCS) analysis analyzed on 04/23/15 had Percent Recoveries (%Rs) for trans-1,2-dichloroethene and methylene chloride above the upper quality control limit. Samples MRC-MW-102A-042015 and MRC-MW-102B-042015 were affected. No action was taken for methylene chloride because this compound was not detected in the affected samples. The detected result reported for trans-1,2-dichloroethene in sample MRC-MW-102B-042015 was qualified as estimated, (J).

- The VOC LCS analysis analyzed on 04/27/15 had %Rs for cis-1,3-dichloropropene and o-xylene below the lower quality control limits. Sample MRC-MW-10A-042015 was affected. The non-detected results reported for these compounds in the affected sample were qualified as estimated, (UJ).

- The following analytes below were detected in the laboratory method/preparation and/or trip blanks at the following maximum concentrations:

Compound/Analyte	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane [1]	0.62	3.1
Bromomethane [2]	0.58	2.9
Molybdenum [3]	0.008 mg/L	0.04 mg/L
Iron [4]	0.029 mg/L	0.145 mg/L

[1] - Maximum concentration detected in the laboratory method blank, 2168253, affecting samples MRC-MW-102A-042015 and MRC-MW-102B-042015.
[2] - Maximum concentration detected in the trip blank, TB-042015, affecting sample MRC-MW-10A-042015.
[3] - Maximum concentration detected in the 6020A initial calibration blank affecting all metals samples.
[4] - Maximum concentration detected in the 6010C laboratory preparation blank affecting all metals samples.

Action levels of 5X the maximum concentration were established to evaluate for blank contamination. Dilution factor, if necessary, was taken into consideration during the application of the action level. The detected results reported for these compounds in the affected samples below the established action level were qualified as non-detected, (U).

- Detected results reported below the RL but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

The VOC continuing calibration performed on 04/27/15 @ 1:46 had a %Drift for bromomethane which exceeded the 20% quality control limit. Sample MRC-MW-10A-042015 was affected. No action was taken because the detected result was qualified for trip blank contamination.

The perchlorate Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses had %Rs for perchlorate below the lower quality control limit. No action was taken in the associated sample because the unspiked sample was not in this SDG.

Sample MRC-MW-102B-042015 was reanalyzed at a 20X dilution because cis-1,2-dichloroethene exceeded the calibration range of the instrument in the undiluted analysis. The result from the 20X dilution was used in the data validation. The laboratory only reported the diluted result on the electronic deliverable and the date of reanalysis was incorrect on the electronic deliverable.

1,4-Dioxane was reported in both the VOC fraction and the EPA Method 522 analysis for sample MRC-MW-10A-042015.

Non-detected results were reported to the MDL.

Executive Summary

Laboratory Performance: The VOC initial an continuing RRFs for 1,4-dioxane were below 0.005. VOC continuing calibration %Drifts and %Ds exceeded 20%. Contaminants were detected in the VOC and metals laboratory preparation/method blanks. The VOC LCS analyses had noncompliant %Rs.

Other Factors Affecting Data Quality: One VOC required further dilution. The trip blank contained bromomethane. Results below the RL were estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Michelle L. Allen
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-102A-042015			MRC-MW-102B-042015			MRC-MW-10A-042015			TB-042015		
SDG: 2066115R	LAB_ID	2066115002			2066115003			2066115005			2066115001		
FRACTION: OV	SAMP_DATE	4/20/2015			4/20/2015			4/20/2015			4/20/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		2.2			1	U		1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U		7	U		7	U	
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DIOXANE		320	UR	C	320	UR	C	320	UR	C	320	UR	C
2-BUTANONE		10	U		10	U		10	U		10	U	
2-HEXANONE		5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		10	U		10	U		10	U		10	U	
BENZENE		0.42	J	P	0.38	J	P	1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		0.6	U	A	0.56	U	A	0.46	U	B	0.58	J	P
CARBON DISULFIDE		1	UJ	C	1	UJ	C	1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		2.3			482			0.38	J	P	1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	UJ	E	1	U	
CYCLOHEXANE		1.2			1	U		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-102A-042015			MRC-MW-102B-042015			MRC-MW-10A-042015			TB-042015		
SDG: 2066115R	LAB_ID	2066115002			2066115003			2066115005			2066115001		
FRACTION: OV	SAMP_DATE	4/20/2015			4/20/2015			4/20/2015			4/20/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	UJ	C	1	UJ	C	1	U		1	U	
ETHYLBENZENE		1	U		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U		1	U	
M+P-XYLENES		2	U		2	U		2	U		2	U	
METHYL ACETATE		2	U		2	U		2	U		2	U	
METHYL CYCLOHEXANE		0.63	J	CP	1	UJ	C	1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	UJ	E	1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U		1	U		1	U	
TOLUENE		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		6	J	E	1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		0.42	J	P	123			1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.38	J	P	0.39	J	P	1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-10A-042015		
SDG: 2066115R	LAB_ID	2066115005		
FRACTION: OS	SAMP_DATE	4/20/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,4-DIOXANE		0.88		

PROJ_NO: 06247	NSAMPLE	MRC-MW-102B-042015			MRC-MW-10A-042015			MRC-MW-52A-042015		
SDG: 2066115R	LAB_ID	2066115003			2066115005			2066115004		
FRACTION: M	SAMP_DATE	4/20/2015			4/20/2015			4/20/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U		0.0022	U	
ARSENIC		0.003	U		0.0022	J	P	0.0035		
BARIUM		0.04			0.072			0.85		
BERYLLIUM		0.015			0.00035	J	P	0.071		
CADMIUM		0.0011	J	P	0.0011	U		0.0025		
CHROMIUM		0.00091	J	P	0.0029			0.0016	J	P
COBALT		0.41			0.056			2		
COPPER		0.0032	J	P	0.002	J	P	0.1		
IRON		0.063	U	A	67.6			10.3		
LEAD		0.0022	U		0.0011	J	P	0.0027		
MANGANESE		0.35			5.4			26.2		
MERCURY		0.0005	U		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	U		0.0022	U		0.0022	U	
NICKEL		0.58			0.0094			1.4		
SELENIUM		0.0056	U		0.0056	U		0.0099		
SILVER		0.0022	U		0.0022	U		0.0022	U	
THALLIUM		0.001	U		0.001	U		0.0011		
VANADIUM		0.0022	U		0.0034			0.0017	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-52A-042015		
SDG: 2066115R	LAB_ID	004		
FRACTION: MISC	SAMP_DATE	4/20/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PERCHLORATE		0.2	UJ	C

Appendix B

Results as Reported by the Laboratory

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102A-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042324.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	0.42	J
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.60	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.2	
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	2.3	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102A-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042324.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	0.63	J
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	0.42	J
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	0.38	J
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102B-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042325.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	0.38	J
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.56	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	2.2	
156-59-2	cis-1,2-Dichloroethene	613	E
156-60-5	trans-1,2-Dichloroethene	6.0	
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102B-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042325.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	123	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	0.39	J
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102B-042015-DL20

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042719.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 20.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	200	U
71-43-2	Benzene	20.0	U
74-97-5	Bromochloromethane	20.0	U
75-27-4	Bromodichloromethane	20.0	U
75-25-2	Bromoform	20.0	U
74-83-9	Bromomethane	11.2	J
78-93-3	2-Butanone	200	U
75-15-0	Carbon Disulfide	20.0	U
56-23-5	Carbon Tetrachloride	20.0	U
108-90-7	Chlorobenzene	20.0	U
124-48-1	Chlorodibromomethane	20.0	U
75-00-3	Chloroethane	20.0	U
67-66-3	Chloroform	20.0	U
74-87-3	Chloromethane	20.0	U
110-82-7	Cyclohexane	20.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	140	U
106-93-4	1,2-Dibromoethane	20.0	U
95-50-1	1,2-Dichlorobenzene	20.0	U
541-73-1	1,3-Dichlorobenzene	20.0	U
106-46-7	1,4-Dichlorobenzene	20.0	U
75-71-8	Dichlorodifluoromethane	20.0	U
75-34-3	1,1-Dichloroethane	20.0	U
107-06-2	1,2-Dichloroethane	20.0	U
75-35-4	1,1-Dichloroethene	20.0	U
156-59-2	cis-1,2-Dichloroethene	482	
156-60-5	trans-1,2-Dichloroethene	13.8	J
78-87-5	1,2-Dichloropropane	20.0	U
10061-01-5	cis-1,3-Dichloropropene	20.0	U
10061-02-6	trans-1,3-Dichloropropene	20.0	U
123-91-1	1,4-Dioxane	6400	U
100-41-4	Ethylbenzene	20.0	U
76-13-1	Freon 113	20.0	U
591-78-6	2-Hexanone	100	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-102B-042015-DL20

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042719.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 20.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	20.0	U
79-20-9	Methyl acetate	40.0	U
108-87-2	Methyl cyclohexane	20.0	U
1634-04-4	Methyl t-Butyl Ether	20.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	100	U
75-09-2	Methylene Chloride	20.0	U
100-42-5	Styrene	20.0	U
79-34-5	1,1,2,2-Tetrachloroethane	20.0	U
127-18-4	Tetrachloroethene	20.0	U
108-88-3	Toluene	20.0	U
87-61-6	1,2,3-Trichlorobenzene	40.0	U
120-82-1	1,2,4-Trichlorobenzene	40.0	U
71-55-6	1,1,1-Trichloroethane	20.0	U
79-00-5	1,1,2-Trichloroethane	20.0	U
79-01-6	Trichloroethene	110	
75-69-4	Trichlorofluoromethane	20.0	U
75-01-4	Vinyl Chloride	20.0	U
95-47-6	o-Xylene	20.0	U
108383/106423	mp-Xylene	40.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-10A-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042713.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.46	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.38	J
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-10A-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042713.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042321.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.58	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042321.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-1
0A-042015

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Matrix: (soil/water) WATER Lab Sample ID: 2066115005

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042907

Level: (low/med) LOW Date Received: 04/20/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/29/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/29/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.88	_____

FORM I SV

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6020 3015

Sample ID: 2066115003 **Client ID:** MRC-MW-102B-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68716 **Prep Date:** 4/22/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:03:39
Arsenic	7440-38-2	0.0030	mg/L	U		M	0.0030	1.00	4/22/2015	14:03:39
Barium	7440-39-3	0.040	mg/L			M	0.0056	1.00	4/22/2015	14:03:39
Beryllium	7440-41-7	0.015	mg/L			M	0.0010	1.00	4/22/2015	14:03:39
Cadmium	7440-43-9	0.0011	mg/L	J		M	0.0011	1.00	4/22/2015	14:03:39
Chromium	7440-47-3	0.0009	mg/L	J		M	0.0022	1.00	4/22/2015	14:03:39
Cobalt	7440-48-4	0.41	mg/L			M	0.0056	1.00	4/22/2015	14:03:39
Copper	7440-50-8	0.0032	mg/L	J		M	0.0056	1.00	4/22/2015	14:03:39
Lead	7439-92-1	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:03:39
Manganese	7439-96-5	0.35	mg/L			M	0.0056	1.00	4/22/2015	14:03:39
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/22/2015	14:03:39
Nickel	7440-02-0	0.58	mg/L			M	0.0056	1.00	4/22/2015	14:03:39
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/22/2015	14:03:39
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:03:39
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/22/2015	14:03:39
Vanadium	7440-62-2	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:03:39

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6010C 3015

Sample ID: 2066115003 **Client ID:** MRC-MW-102B-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	0.063	mg/L	J		P	0.067	1.00	4/22/2015	10:11:46

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 7470A

Sample ID: 2066115003 **Client ID:** MRC-MW-102B-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:52:47

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6020 3015

Sample ID: 2066115005 **Client ID:** MRC-MW-10A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68716 **Prep Date:** 4/22/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:10:56
Arsenic	7440-38-2	0.0022	mg/L	J		M	0.0030	1.00	4/22/2015	14:10:56
Barium	7440-39-3	0.072	mg/L			M	0.0056	1.00	4/22/2015	14:10:56
Beryllium	7440-41-7	0.00035	mg/L	J		M	0.0010	1.00	4/22/2015	14:10:56
Cadmium	7440-43-9	0.0011	mg/L	U		M	0.0011	1.00	4/22/2015	14:10:56
Chromium	7440-47-3	0.0029	mg/L			M	0.0022	1.00	4/22/2015	14:10:56
Cobalt	7440-48-4	0.056	mg/L			M	0.0056	1.00	4/22/2015	14:10:56
Copper	7440-50-8	0.0020	mg/L	J		M	0.0056	1.00	4/22/2015	14:10:56
Lead	7439-92-1	0.0011	mg/L	J		M	0.0022	1.00	4/22/2015	14:10:56
Manganese	7439-96-5	5.4	mg/L			M	0.0056	1.00	4/22/2015	14:10:56
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/22/2015	14:10:56
Nickel	7440-02-0	0.0095	mg/L			M	0.0056	1.00	4/22/2015	14:10:56
Selenium	7782-49-2	0.0056	mg/L	U		M	0.0056	1.00	4/22/2015	14:10:56
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:10:56
Thallium	7440-28-0	0.0010	mg/L	U		M	0.0010	1.00	4/22/2015	14:10:56
Vanadium	7440-62-2	0.0034	mg/L			M	0.0022	1.00	4/22/2015	14:10:56

Comments:

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6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6010C 3015

Sample ID: 2066115005 **Client ID:** MRC-MW-10A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	67.6	mg/L			P	0.067	1.00	4/22/2015	10:18:03

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 7470A

Sample ID: 2066115005 **Client ID:** MRC-MW-10A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:57:10

Comments:

6020 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6020 3015

Sample ID: 2066115004 **Client ID:** MRC-MW-52A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68716 **Prep Date:** 4/22/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Antimony	7440-36-0	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:07:14
Arsenic	7440-38-2	0.0035	mg/L			M	0.0030	1.00	4/22/2015	14:07:14
Barium	7440-39-3	0.85	mg/L			M	0.0056	1.00	4/22/2015	14:07:14
Beryllium	7440-41-7	0.071	mg/L			M	0.0010	1.00	4/22/2015	14:07:14
Cadmium	7440-43-9	0.0025	mg/L			M	0.0011	1.00	4/22/2015	14:07:14
Chromium	7440-47-3	0.0016	mg/L	J		M	0.0022	1.00	4/22/2015	14:07:14
Cobalt	7440-48-4	2.0	mg/L			M	0.0056	1.00	4/22/2015	14:07:14
Copper	7440-50-8	0.10	mg/L			M	0.0056	1.00	4/22/2015	14:07:14
Lead	7439-92-1	0.0027	mg/L			M	0.0022	1.00	4/22/2015	14:07:14
Manganese	7439-96-5	26.2	mg/L			M	0.056	10.00	4/22/2015	14:55:25
Molybdenum	7439-98-7	0.0056	mg/L	U		M	0.0056	1.00	4/22/2015	14:07:14
Nickel	7440-02-0	1.4	mg/L			M	0.0056	1.00	4/22/2015	14:07:14
Selenium	7782-49-2	0.0099	mg/L			M	0.0056	1.00	4/22/2015	14:07:14
Silver	7440-22-4	0.0022	mg/L	U		M	0.0022	1.00	4/22/2015	14:07:14
Thallium	7440-28-0	0.0011	mg/L			M	0.0010	1.00	4/22/2015	14:07:14
Vanadium	7440-62-2	0.0017	mg/L	J		M	0.0022	1.00	4/22/2015	14:07:14

Comments:

-

6010C 3015

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 6010C 3015

Sample ID: 2066115004 **Client ID:** MRC-MW-52A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 45.00 **Final Vol:** 50.0

Prep Batch ID: 68515 **Prep Date:** 4/21/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Iron	7439-89-6	10.3	mg/L			P	0.067	1.00	4/22/2015	10:14:53

Comments:

7470A

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019 **Method Type:** 7470A

Sample ID: 2066115004 **Client ID:** MRC-MW-52A-042015

Matrix: WATER **Date Received:** 4/20/2015 **Level:** LOW

% Solids: **Sample Wt/Vol:** 25.00 **Final Vol:** 25.0

Prep Batch ID: 68924 **Prep Date:** 4/23/2015 **Total/Dissolved:** TOTAL

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Mercury	7439-97-6	0.00050	mg/L	U		CV	0.00050	1.00	4/23/2015	13:56:04

Comments:

ANALYTICAL REPORT

Workorder: 34-1511439
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: 2066115 004 | Sampling Site: 2066115 | Collected: 04/20/2015
Lab ID: 1511439001 | Media: 250 mL Nalgene | Received: 04/24/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1562 (HBN: 147840) | **Percent Solid:** NA
Analyzed: 04/28/2015 18:34 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Comments

Quality Control: EPA 6850 - (HBN: 147840)

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 04/29/2015 11:04	/S/ Thomas T. McKay 04/29/2015 16:04

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

DJM

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** **NUMBER** 0506

2066115

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME A
112IC06247	MMC GW 295	Tony Apuzzage	701 528-3021	ALS
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
Walt Pa		Walt Pyron	301 991-3914	
		CARRIER/WAYBILL NUMBER		**CITY, STATE**

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)								COMMENTS
									G	P	C	P					
									PRESERVATIVE USED			HCl	None	—			
									TYPE OF ANALYSIS	VOCs	Total metals	1,4 Dioxane	perchlorate				
4-20	—	TB-042015	—	—	—	QC	G	3	X								
	0942	MMC-MW-102A-042015				GW			X								
	1124	MMC-MW-102B-042015							X	X							
	1040	MMC-MW-52A-042015								X		X					
	0930	MMC-MW-10A 042015							X	X	X						

	Y	N	Initials	Cooler Temp:
Custody Seals Present?			LMG	°C
(if present) Seals Intact?				Cooler #:
Received on Ice?				
COC/Lbls Complete				Therm ID: 291
Cont in Good Cond?				
Correct Containers?				Ship Carrier
Correct Samp Vol?				FedEx UPS
Correct Preservation?				DHL
Headspace/Volatiles?				

Tracking #:

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	4-20-15	1220	1. RECEIVED BY	4/20/15	1220
2. RELINQUISHED BY	4/20		2. RECEIVED BY	4/20	2120
3. RELINQUISHED BY	4/20	2046	3. RECEIVED BY SFS	4/20	2046

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

LMG 04/21/15 0220

ALS

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-019

Sample Management

This report contains the results of the analysis of five (5) ground water samples collected on April 20, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 20, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

One (1) sample was subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Four (4) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2168253, bromomethane was detected at 0.62J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2168254, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits.
- In 2169480, cis-1,3-dichloropropene and o-xylene were recovered below the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. One (1) water sample was extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the ICB at 0.0008 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3b represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Three (3) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2066115003 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2066115 TMM019|MRC GW 2015

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2066115001	TB-042015	Water	4/20/2015 20:46	4/20/2015 20:46	Collected by Client
2066115002	MRC-MW-102A-042015	Water	4/20/2015 09:42	4/20/2015 20:46	Collected by Client
2066115003	MRC-MW-102B-042015	Water	4/20/2015 11:24	4/20/2015 20:46	Collected by Client
2066115004	MRC-MW-52A-042015	Water	4/20/2015 10:40	4/20/2015 20:46	Collected by Client
2066115005	MRC-MW-10A-042015	Water	4/20/2015 09:30	4/20/2015 20:46	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2066115 TMM019|MRC GW 2015

Workorder Comments

See attached subcontracted perchlorate results from ALS-SLC. VLF 5/1/15

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-019

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2165640(LCS)	92.9	82.4	90.5	88.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-019

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2168253(MB)	88.2	87.7	104	94.9	0
03	2168254(LCS)	85.0	84.1	95.4	87.1	0
04	TB-042015	88.5	91.2	107	97.8	0
05	MRC-MW-102A-042015	87.9	88.1	107	94.9	0
06	MRC-MW-102B-042015	88.5	88.3	104	96.1	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-019

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
07	2169479(MB)	84.6	91.0	107	94.7	0
08	2169480(LCS)	82.2	86.0	97.9	86.2	0
09	MRC-MW-10A-042015	88.6	95.2	111	95.3	0
10	MRC-MW-102B-042015-DL20	90.8	94.0	112	97.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Lab File ID: 15041707.D Date Analyzed: 4/17/2015

Instrument ID: ms15.i Time Analyzed: 11:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	393536	5.913	362552	7.686	921216	3.910
UPPER LIMIT	787072	6.413	725104	8.186	1842432	4.410
LOWER LIMIT	196768	5.413	181276	7.186	460608	3.410
SAMPLE NO.						
2165640(LCS)	389068	5.912	362447	7.686	881867	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Lab File ID: 15042302.D Date Analyzed: 4/23/2015

Instrument ID: ms15.i Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	390234	5.912	359420	7.680	891295	3.910
UPPER LIMIT	780468	6.412	718840	8.180	1782590	4.410
LOWER LIMIT	195117	5.412	179710	7.180	445648	3.410
SAMPLE NO.						
1800	390234	5.912	359420	7.680	891295	3.910
2168253(MB)	297853	5.913	231105	7.686	726287	3.910
2168254(LCS)	365551	5.913	329106	7.686	807783	3.910
TB-042015	278501	5.913	222598	7.686	713444	3.910
MRC-MW-102A-04201	272082	5.912	216868	7.686	694025	3.910
MRC-MW-102B-04201	270193	5.913	213968	7.686	711327	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Lab File ID: 15042702.D Date Analyzed: 4/27/2015

Instrument ID: ms15.i Time Analyzed: 01:46

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	409666	5.913	383464	7.686	907170	3.910
UPPER LIMIT	819332	6.413	766928	8.186	1814340	4.410
LOWER LIMIT	204833	5.413	191732	7.186	453585	3.410
SAMPLE NO.						
1800	409666	5.913	383464	7.686	907170	3.910
2169479(MB)	286855	5.913	232764	7.686	728075	3.910
2169480(LCS)	379979	5.913	350611	7.686	815835	3.910
MRC-MW-10A-042015	258404	5.913	202349	7.686	660299	3.910
MRC-MW-102B-04201	264661	5.913	205095	7.686	679925	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168253

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-019

Lab File ID: 15042305.D Lab Sample ID: 2168253

Date Analyzed: 4/23/2015 Time Analyzed: 12:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168254(LCS)	2168254	15042306.D	12:51
TB-042015	2066115001	15042321.D	17:10
MRC-MW-102A-042015	2066115002	15042324.D	18:01
MRC-MW-102B-042015	2066115003	15042325.D	18:19

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.62	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		110	110	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.5	112	(73-117)
Bromodichloromethane	20.0		21.6	108	(79-126)
Bromoform	20.0		16.9	84.5	(70-123)
Bromomethane	20.0		27.2	136	(45-148)
2-Butanone	100		98.9	98.9	(50-152)
Carbon Disulfide	20.0		24.0	120	(57-131)
Carbon Tetrachloride	20.0		23.2	116	(62-132)
Chlorobenzene	20.0		21.5	108	(85-117)
Chlorodibromomethane	20.0		17.1	85.3	(77-122)
Chloroethane	20.0		21.9	109	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		20.8	104	(38-156)
Cyclohexane	20.0		22.4	112	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.4	92.2	(59-133)
1,2-Dibromoethane	20.0		20.2	101	(80-124)
1,2-Dichlorobenzene	20.0		21.2	106	(82-118)
1,3-Dichlorobenzene	20.0		22.3	112	(81-118)
1,4-Dichlorobenzene	20.0		21.1	106	(81-116)
Dichlorodifluoromethane	20.0		20.9	105	(17-166)
1,1-Dichloroethane	20.0		23.5	117	(78-124)
1,2-Dichloroethane	20.0		22.1	110	(70-133)
1,1-Dichloroethene	20.0		24.8	124	(63-128)
cis-1,2-Dichloroethene	20.0		22.9	115	(78-125)
trans-1,2-Dichloroethen	20.0		26.0	130*	(71-122)
1,2-Dichloropropane	20.0		22.3	111	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.5	(81-121)
trans-1,3-Dichloroprope	20.0		17.8	89.2	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		475	95	(1-280)
Ethylbenzene	20.0		20.3	102	(80-124)
Freon 113	20.0		23.8	119	(50-130)
2-Hexanone	100		87.9	87.9	(65-154)
Isopropylbenzene	20.0		18.4	92.1	(73-129)
Methyl acetate	20.0		21.5	108	(70-130)
Methyl cyclohexane	20.0		22.5	112	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		94.8	94.8	(71-146)
Methylene Chloride	20.0		25.7	129*	(76-121)
Styrene	20.0		19.2	96	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.7	98.6	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.5	103	(80-125)
1,2,3-Trichlorobenzene	20.0		17.6	88.1	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		23.5	117	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.4	(82-126)
Trichloroethene	20.0		23.3	116	(77-124)
Trichlorofluoromethane	20.0		20.8	104	(38-123)
Vinyl Chloride	20.0		21.5	107	(27-138)
o-Xylene	20.0		16.9	84.4	(79-124)
mp-Xylene	40.0		39.6	98.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2169479

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-019

Lab File ID: 15042705a.D Lab Sample ID: 2169479

Date Analyzed: 4/27/2015 Time Analyzed: 02:48

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2169480(LCS)	2169480	15042706a.D	03:05
MRC-MW-10A-042015	2066115005	15042713.D	05:05
MRC-MW-102B-042015-DL	2066115003	15042719.D	06:47

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2169479(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2169479

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042705a.D

Level (low/med): Date Received: 4/27/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2169479(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2169479

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042705a.D

Level (low/med): Date Received: 4/27/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2169480

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		108	108	(40-151)
Benzene	20.0		22.2	111	(80-124)
Bromochloromethane	20.0		22.0	110	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		16.7	83.4	(70-123)
Bromomethane	20.0		26.1	130	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		22.5	112	(57-131)
Carbon Tetrachloride	20.0		22.5	112	(62-132)
Chlorobenzene	20.0		20.1	100	(85-117)
Chlorodibromomethane	20.0		16.3	81.4	(77-122)
Chloroethane	20.0		19.1	95.4	(51-142)
Chloroform	20.0		22.0	110	(78-122)
Chloromethane	20.0		18.6	93	(38-156)
Cyclohexane	20.0		21.4	107	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.4	86.9	(59-133)
1,2-Dibromoethane	20.0		19.0	95.2	(80-124)
1,2-Dichlorobenzene	20.0		19.5	97.5	(82-118)
1,3-Dichlorobenzene	20.0		20.3	102	(81-118)
1,4-Dichlorobenzene	20.0		19.7	98.7	(81-116)
Dichlorodifluoromethane	20.0		18.6	92.9	(17-166)
1,1-Dichloroethane	20.0		21.7	108	(78-124)
1,2-Dichloroethane	20.0		21.5	108	(70-133)
1,1-Dichloroethene	20.0		23.4	117	(63-128)
cis-1,2-Dichloroethene	20.0		21.3	107	(78-125)
trans-1,2-Dichloroethen	20.0		23.5	117	(71-122)
1,2-Dichloropropane	20.0		21.4	107	(81-127)
cis-1,3-Dichloropropene	20.0		15.5	77.3*	(81-121)
trans-1,3-Dichloroprope	20.0		17.2	86.1	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2169480

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		467	93.5	(1-280)
Ethylbenzene	20.0		18.5	92.5	(80-124)
Freon 113	20.0		23.2	116	(50-130)
2-Hexanone	100		86.0	86	(65-154)
Isopropylbenzene	20.0		16.2	81.2	(73-129)
Methyl acetate	20.0		19.5	97.4	(70-130)
Methyl cyclohexane	20.0		20.9	104	(70-130)
Methyl t-Butyl Ether	20.0		19.9	99.6	(69-115)
4-Methyl-2-Pentanone(MI	100		91.6	91.6	(71-146)
Methylene Chloride	20.0		23.8	119	(76-121)
Styrene	20.0		17.1	85.3	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.7	93.4	(74-135)
Tetrachloroethene	20.0		20.6	103	(72-124)
Toluene	20.0		18.9	94.4	(80-125)
1,2,3-Trichlorobenzene	20.0		16.4	82.2	(61-126)
1,2,4-Trichlorobenzene	20.0		15.4	76.9	(67-123)
1,1,1-Trichloroethane	20.0		22.3	112	(66-130)
1,1,2-Trichloroethane	20.0		19.3	96.3	(82-126)
Trichloroethene	20.0		21.7	108	(77-124)
Trichlorofluoromethane	20.0		19.0	95.1	(38-123)
Vinyl Chloride	20.0		19.2	95.9	(27-138)
o-Xylene	20.0		15.4	77.1*	(79-124)
mp-Xylene	40.0		36.3	90.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-019

Lab File ID: 15041700.D BFB Injection Date: 4/17/2015

Instrument ID: ms15.i BFB Injection Time: 09:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.3
175	5.0 - 9.0% of mass 174	5.7 (7.0) 1
176	95.0 - 101.0% of mass 174	77.6 (95.4) 1
177	5.0 - 9.0% of mass 176	5.0 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15041703.D	4/17/2015	10:39
1234	1234	15041704.D	4/17/2015	10:56
1235	1235	15041705.D	4/17/2015	11:13
1236	1236	15041706.D	4/17/2015	11:31
1237	1237	15041707.D	4/17/2015	11:48
1238	1238	15041708.D	4/17/2015	12:05
1239	1239	15041709.D	4/17/2015	12:23
2165640(LCS)	2165640	15041714.D	4/17/2015	13:49

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02150			A		0.025420		13.35269
Acrolein	0.04346	0.04700		A		0.046870		8.87083
Acrylonitrile	0.09374	0.09420		A		0.101720		10.11420
Acetonitrile	0.02968			A		0.036650		13.39134
tert-Amyl Ethylether	4213141	4951		L	0.000000	1.627200		0.99780
tert-Amyl methyl ether	5133616	5851		L	0.000000	1.323550		0.99917
tert-Amyl Alcohol	601293	704		L	0.000000	56.396912		0.99814
Benzene	1.27434	1.10894		A		1.241190		10.58614
Benzyl Chloride				Q	0.000000	0.143690	0.029740	0.99991
Bromobenzene	0.97604	0.74747		A		0.902000		14.84422
Bromochloromethane	0.15243	0.14604		A		0.163350		10.25949
Bromodichloromethane	0.44080	0.33394		A		0.392350		13.81932
Bromoform *	1338355	1232		Q	0.000000	0.435990	0.009530	0.99971
Bromomethane	1075271			L	0.000000	6.218590		0.99848
2-Butanone	0.03713			A		0.037740		12.55237
tert.- Butyl Alcohol	0.02376			A		0.024770		7.01068
tert-Butylbenzene	2073194	1739		L	0.000000	1.297790		0.99982
n-Butylbenzene	2204415			L	0.000000	1.224140		0.99935
sec-Butylbenzene	10720671	7378		L	0.000000	0.250660		0.99977
Carbon Disulfide	0.75980	0.60853		A		0.664000		10.57539
Carbon Tetrachloride	0.40632	0.28418		A		0.362980		13.42907
Chloroacetonitrile	325006			Q	0.000000	0.022800	-0.000010	0.99965
Chlorobenzene *	2.19164	1.87636		A		2.138210		9.16523
1-Chlorobutane	0.30442	0.27544		A		0.301730		10.02872
Chlorodibromomethane	2229887	2646		L	0.000000	1.320690		0.99897
Chloroethane	0.20128			A		0.238640		11.97155
2-Chloroethylvinyl ether	0.14061			A		0.128220		10.02306
Chloroform **	3904606	18104		Q	0.030370	0.575280	0.000060	0.99967
1-Chlorohexane	2878567	2684		L	0.000000	1.022160		0.99867
Chloromethane *	0.42875			A		0.515330		14.85648
Chloroprene	0.41952	0.36738		A		0.407690		10.34581
3-Chloro-1-propene	0.29246	0.30678		A		0.314290		6.84089
o-Chlorotoluene	8134248	7088		L	0.000000	0.331320		0.99982
p-Chlorotoluene	7603192	5801		L	0.000000	0.354900		0.99977
Cyclohexane	2984728	4171		L	0.000000	2.262420		0.99982
1,2-Dibromo-3-Chloropropane	0.14266	0.09901		A		0.128270		11.53273

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.65129	0.54870		A		0.613510		11.23085
Dibromomethane	0.19172	0.18388		A		0.192910		6.75287
trans-1,4-Dichloro-2-butene	635655	649		L	0.000000	4.160080		0.99863
1,2-Dichlorobenzene	1.78231	1.55402		A		1.690540		9.20938
1,3-Dichlorobenzene	1.82595	1.40511		A		1.714790		12.13976
1,4-Dichlorobenzene	1.85978	1.89440		A		1.869510		5.23051
Dichlorodifluoromethane	0.39025			A		0.440580		10.81630
1,1-Dichloroethane *		0.53864		A		0.565720		7.47475
1,2-Dichloroethene, Total	5300341	9644		L	0.000000	2.545260		0.99960
1,2-Dichloroethane	0.40364	0.41141		A		0.430720		8.19580
1,1-Dichloroethene **	0.38202	0.39648		A		0.398900		6.23044
cis-1,2-Dichloroethene	0.41233	0.36831		A		0.404200		8.14800
trans-1,2-Dichloroethene	0.37614	0.37806		A		0.388220		7.20134
Dichlorofluoromethane	0.54189	0.61008		A		0.574180		8.04570
1,1-Dichloro-2-Propanone	207685			L	0.000000	69.396950		0.99911
2,2-Dichloropropane	0.36550	0.30570		A		0.332710		9.13718
1,3-Dichloropropane	1.20820	0.99315		A		1.169770		9.65596
1,2-Dichloropropane **	0.33277	0.29602		A		0.317840		9.42977
1,1-Dichloropropene	0.40589	0.33603		A		0.378320		11.86754
cis-1,3-Dichloropropene	3487668	3447		L	0.000000	0.846900		0.99846
trans-1,3-Dichloropropene	3142276	2943		L	0.000000	0.933700		0.99934
1,3-Dichloropropene, Total	6629944	6390		L	0.000000	0.888180		0.99894
Diisobutylene	4686812	32902		L	0.000000	1.435930		0.99976
Diisopropyl ether	0.83077	0.79937		A		0.844300		8.28498
1,4-Dioxane	0.00340			A		0.003300		12.26198
Ethyl Acetate	0.25207	0.25137		A		0.254670		8.19100
Ethyl ether	0.18507	0.19464		A		0.190110		7.07916
Ethyl Methacrylate	2846887	2359		L	0.000000	1.026370		0.99940
Ethyl tert-butyl ether	5580280	7541		L	0.000000	1.203310		0.99983
Ethylbenzene **	3394435	3836		L	0.000000	0.861550		0.99977
Freon 113	0.25000	0.32164		A		0.273740		9.74960
Heptane	1405405	1707		L	0.000000	4.824340		0.99835
Hexachlorobutadiene	0.47840	0.42810		A		0.431370		10.14694
Hexachloroethane	1598514	1616		L	0.000000	1.713730		0.99725
Hexane	0.47877	0.53586		A		0.483430		5.95882
2-Hexanone	6265115	6303		L	0.000000	2.275700		0.99798

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8816753	4948		L	0.000000	0.305930		0.99972
1,3,5-Trimethylbenzene	8637632	5644		L	0.000000	0.312070		0.99981
Vinyl Acetate	431185	521		L	0.000000	15.534290		0.99979
Vinyl Chloride **	0.36981			A		0.390360		7.18993
o-Xylene	4059055	3537		L	0.000000	0.725160		0.99896
mp-Xylene	8374675	8101		L	0.000000	0.699710		0.99963
4-Bromofluorobenzene		4420		L	0.000000	1.162640		0.99966
Dibromofluoromethane				A		0.336800		13.41450
1,2-Dichloroethane-d4	2270423			L	0.000000	2.961950		0.99888
Toluene-d8				A		2.577610		9.74042

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,2-Dibromoethane	20.0		20.3	101	(80-124)
1,2-Dichlorobenzene	20.0		19.9	99.4	(82-118)
1,3-Dichlorobenzene	20.0		21.1	105	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.5	(81-116)
Dichlorodifluoromethane	20.0		18.2	91.1	(17-166)
1,1-Dichloroethane	20.0		20.5	103	(78-124)
1,2-Dichloroethane	20.0		20.9	104	(70-133)
1,1-Dichloroethene	20.0		21.6	108	(63-128)
cis-1,2-Dichloroethene	20.0		21.2	106	(78-125)
trans-1,2-Dichloroethen	20.0		22.0	110	(71-122)
1,2-Dichloropropane	20.0		20.7	103	(81-127)
cis-1,3-Dichloropropene	20.0		16.7	83.3	(81-121)
trans-1,3-Dichloroprope	20.0		17.7	88.4	(78-126)
1,4-Dioxane	500		502	100	(1-280)
Ethylbenzene	20.0		19.0	94.9	(80-124)
Acetone	100		96.5	96.5	(40-151)
Benzene	20.0		21.5	107	(80-124)
Bromochloromethane	20.0		21.2	106	(73-117)
Bromodichloromethane	20.0		20.3	101	(79-126)
Bromoform	20.0		17.1	85.5	(70-123)
Bromomethane	20.0		19.9	99.5	(45-148)
2-Butanone	100		102	102	(50-152)
Carbon Disulfide	20.0		20.9	105	(57-131)
Carbon Tetrachloride	20.0		21.3	106	(62-132)
Chlorobenzene	20.0		20.5	103	(85-117)
Chlorodibromomethane	20.0		17.0	84.9	(77-122)
Chloroethane	20.0		16.7	83.6	(51-142)
Chloroform	20.0		21.0	105	(78-122)
Chloromethane	20.0		19.2	96.2	(38-156)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Laboratory Control Spike - Sample No: 2165640

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Cyclohexane	20.0		20.7	104	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.3	91.6	(59-133)
Freon 113	20.0		21.2	106	(50-130)
2-Hexanone	100		93.0	93	(65-154)
Isopropylbenzene	20.0		17.3	86.4	(73-129)
Methyl acetate	20.0		20.6	103	(70-130)
Methyl cyclohexane	20.0		21.8	109	(70-130)
Methyl t-Butyl Ether	20.0		19.6	97.9	(69-115)
4-Methyl-2-Pentanone(MI	100		97.8	97.8	(71-146)
Methylene Chloride	20.0		22.0	110	(76-121)
Styrene	20.0		18.0	90	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.5	97.3	(74-135)
Tetrachloroethene	20.0		20.5	102	(72-124)
Toluene	20.0		19.5	97.3	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.6	83	(67-123)
1,1,1-Trichloroethane	20.0		21.5	108	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.1	(82-126)
Trichloroethene	20.0		21.2	106	(77-124)
Trichlorofluoromethane	20.0		18.6	92.8	(38-123)
Vinyl Chloride	20.0		19.3	96.6	(27-138)
o-Xylene	20.0		17.0	84.9	(79-124)
mp-Xylene	40.0		37.5	93.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-019

Lab File ID: 15042300.D BFB Injection Date: 4/23/2015

Instrument ID: ms15.i BFB Injection Time: 09:51

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.3
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	77.8
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	74.8 (96.1) 1
177	5.0 - 9.0% of mass 176	4.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042302.D	4/23/2015	11:17
2168253(MB)	2168253	15042305.D	4/23/2015	12:33
2168254(LCS)	2168254	15042306.D	4/23/2015	12:51
TB-042015	2066115001	15042321.D	4/23/2015	17:10
MRC-MW-102A-042015	2066115002	15042324.D	4/23/2015	18:01
MRC-MW-102B-042015	2066115003	15042325.D	4/23/2015	18:19

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0239			-6.1	100.0	A
Acrolein	0.0469	0.0480			2.4	100.0	A
Acrylonitrile	0.1017	0.1029			1.2	100.0	A
Acetonitrile	0.0366	0.0330			-9.9	100.0	A
tert-Amyl Ethylether	50.0000		49.6704		-0.7	100.0	L
tert-Amyl methyl ether	50.0000		48.6696		-2.7	100.0	L
tert-Amyl Alcohol	250		192		-23.2	100.0	L
Benzene	1.2412	1.4017			12.9	100.0	A
Benzyl Chloride	50.0000		53.7271		7.5	100.0	Q
Bromobenzene	0.9020	1.0364			14.9	100.0	A
Bromochloromethane	0.1634	0.1771			8.4	100.0	A
Bromodichloromethane	0.3923	0.4460			13.7	100.0	A
Bromoform	50.0000		46.2155	0.100	-7.6	100.0	Q
Bromomethane	50.0000		66.9949		34.0	100.0	L
2-Butanone	0.0377	0.0315			-16.7	100.0	A
tert.- Butyl Alcohol	0.0248	0.0228			-8.1	100.0	A
tert-Butylbenzene	50.0000		53.4198		6.8	100.0	L
n-Butylbenzene	50.0000		54.1976		8.4	100.0	L
sec-Butylbenzene	50.0000		54.1201		8.2	100.0	L
Carbon Disulfide	0.6640	0.8077			21.6	100.0	A
Carbon Tetrachloride	0.3630	0.4237			16.7	100.0	A
Chloroacetonitrile	250		227		-9.1	100.0	Q
Chlorobenzene	2.1382	2.3641		0.300	10.6	100.0	A
1-Chlorobutane	0.3017	0.3414			13.2	100.0	A
Chlorodibromomethane	50.0000		46.6616		-6.7	100.0	L
Chloroethane	0.2386	0.2777			16.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0769			-40.1	100.0	A
Chloroform	50.0000		55.2796		10.6	20.0	Q
1-Chlorohexane	50.0000		51.9047		3.8	100.0	L
Chloromethane	0.5153	0.5281		0.100	2.5	100.0	A
Chloroprene	0.4077	0.4777			17.2	100.0	A
3-Chloro-1-propene	0.3143	0.4022			28.0	100.0	A
o-Chlorotoluene	50.0000		53.3696		6.7	100.0	L
p-Chlorotoluene	50.0000		53.7630		7.5	100.0	L
Cyclohexane	50.0000		53.8627		7.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1216			-5.2	100.0	A
1,2-Dibromoethane	0.6135	0.6351			3.5	100.0	A
Dibromomethane	0.1929	0.2000			3.7	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		48.1595		-3.7	100.0	L
1,2-Dichlorobenzene	1.6905	1.8718			10.7	100.0	A
1,3-Dichlorobenzene	1.7148	2.0030			16.8	100.0	A
1,4-Dichlorobenzene	1.8695	2.0376			9.0	100.0	A
Dichlorodifluoromethane	0.4406	0.5551			26.0	100.0	A
1,1-Dichloroethane	0.5657	0.6239		0.100	10.3	100.0	A
1,2-Dichloroethene, Total	100		114		13.8	100.0	L
1,2-Dichloroethane	0.4307	0.4435			3.0	100.0	A
1,1-Dichloroethene	0.3989	0.4351			9.1	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4510			11.6	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4502			16.0	100.0	A
Dichlorofluoromethane	0.5742	0.6201			8.0	100.0	A
1,1-Dichloro-2-Propanone	250		214		-14.4	100.0	L
2,2-Dichloropropane	0.3327	0.4180			25.6	100.0	A
1,3-Dichloropropane	1.1698	1.2213			4.4	100.0	A
1,2-Dichloropropane	0.3178	0.3513			10.5	20.0	A
1,1-Dichloropropene	0.3783	0.4353			15.1	100.0	A
cis-1,3-Dichloropropene	50.0000		49.5108		-1.0	100.0	L
trans-1,3-Dichloropropene	50.0000		49.4206		-1.2	100.0	L
1,3-Dichloropropene, Total	100		98.9314		-1.1	100.0	L
Diisobutylene	50.0000		56.5816		13.2	100.0	L
Diisopropyl ether	0.8443	0.9826			16.4	100.0	A
1,4-Dioxane	0.0033	0.0033			-1.3	100.0	A
Ethyl Acetate	0.2547	0.2417			-5.1	100.0	A
Ethyl ether	0.1901	0.1998			5.1	100.0	A
Ethyl Methacrylate	50.0000		44.9097		-10.2	100.0	L
Ethyl tert-butyl ether	50.0000		52.4469		4.9	100.0	L
Ethylbenzene	50.0000		53.5247		7.0	20.0	L
Freon 113	0.2737	0.2931			7.1	100.0	A
Heptane	50.0000		59.9886		20.0	100.0	L
Hexachlorobutadiene	0.4314	0.5619			30.2	100.0	A
Hexachloroethane	50.0000		48.7170		-2.6	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.5697			17.8	100.0	A
2-Hexanone	250		231		-7.4	100.0	L
Iodomethane	50.0000		77.3056		54.6	100.0	Q
Isobutyl alcohol	500		535		7.1	100.0	L
Isopropyl Alcohol	0.0167	0.0153			-8.8	100.0	A
Isopropylbenzene	50.0000		51.8856		3.8	100.0	L
p-Isopropyltoluene	50.0000		53.4014		6.8	100.0	L
Methyl acetate	0.0545	0.0493			-9.4	100.0	A
Methyl acrylate	50.0000		46.8987		-6.2	100.0	L
Methacrylonitrile	50.0000		49.4612		-1.1	100.0	L
Methyl cyclohexane	1.0036	1.2165			21.2	100.0	A
Methyl methacrylate	50.0000		44.9346		-10.1	100.0	L
Methyl t-Butyl Ether	0.7715	0.7911			2.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		242		-3.1	100.0	L
Methylene Chloride	50.0000		59.9564		19.9	100.0	Q
Naphthalene	50.0000		45.7422		-8.5	100.0	Q
Nitrobenzene	500		426		-14.8	100.0	Q
2-Nitropropane	250		222		-11.1	100.0	L
Octane	50.0000		69.6782		39.4	100.0	L
Pentachloroethane	0.6478	0.7077			9.2	100.0	A
Pentane	0.1681	0.1955			16.3	100.0	A
n-Propanol	0.0219	0.0217			-1.1	100.0	A
Propionitrile	0.0412	0.0384			-7.0	100.0	A
n-Propylbenzene	50.0000		53.7839		7.6	100.0	L
Styrene	50.0000		52.3186		4.6	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7776			12.4	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.9022		0.300	-7.3	100.0	A
Tetrachloroethene	0.6720	0.7333			9.1	100.0	A
Tetrahydrofuran	0.0755	0.0715			-5.4	100.0	A
Toluene	50.0000		53.7037		7.4	20.0	L
Total Xylenes	150		157		4.7	100.0	L
1,2,3-Trichlorobenzene	50.0000		50.4410		0.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		51.2571		2.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.5003			13.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5872			-1.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3685			11.3	100.0	A
Trichlorofluoromethane	0.5623	0.6239			11.0	100.0	A
1,2,3-Trichloropropane	0.3120	0.2846			-8.8	100.0	A
1,2,4-Trimethylbenzene	50.0000		53.0436		6.1	100.0	L
1,3,5-Trimethylbenzene	50.0000		54.0407		8.1	100.0	L
Vinyl Acetate	50.0000		51.8072		3.6	100.0	L
Vinyl Chloride	0.3904	0.4539			16.3	20.0	A
o-Xylene	50.0000		50.8720		1.7	100.0	L
mp-Xylene	100		106		6.3	100.0	L
4-Bromofluorobenzene	50.0000		44.4466		-11.1	100.0	L
Dibromofluoromethane	0.3368	0.2774			-17.6	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8549		-10.3	100.0	L
Toluene-d8	2.5776	2.3218			-9.9	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-019

Lab File ID: 15042700.D BFB Injection Date: 4/27/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.9
75	30.0 - 60.0% of mass 95	48.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	88.1
175	5.0 - 9.0% of mass 174	6.2 (7.1) 1
176	95.0 - 101.0% of mass 174	84.2 (95.5) 1
177	5.0 - 9.0% of mass 176	5.6 (6.6) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042702.D	4/27/2015	01:46
2169479(MB)	2169479	15042705a.D	4/27/2015	02:48
2169480(LCS)	2169480	15042706a.D	4/27/2015	03:05
MRC-MW-10A-042015	2066115005	15042713.D	4/27/2015	05:05
MRC-MW-102B-042015-DL20	2066115003	15042719.D	4/27/2015	06:47

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0250			-1.8	100.0	A
Acrolein	0.0469	0.0479			2.2	100.0	A
Acrylonitrile	0.1017	0.1016			-0.1	100.0	A
Acetonitrile	0.0366	0.0332			-9.3	100.0	A
tert-Amyl Ethylether	50.0000		47.6335		-4.7	100.0	L
tert-Amyl methyl ether	50.0000		49.1583		-1.7	100.0	L
tert-Amyl Alcohol	250		220		-12.0	100.0	L
Benzene	1.2412	1.3652			10.0	100.0	A
Benzyl Chloride	50.0000		50.3552		0.7	100.0	Q
Bromobenzene	0.9020	0.9557			6.0	100.0	A
Bromochloromethane	0.1634	0.1761			7.8	100.0	A
Bromodichloromethane	0.3923	0.4432			13.0	100.0	A
Bromoform	50.0000		46.9534	0.100	-6.1	100.0	Q
Bromomethane	50.0000		60.1045		20.2	100.0	L
2-Butanone	0.0377	0.0345			-8.5	100.0	A
tert.- Butyl Alcohol	0.0248	0.0237			-4.1	100.0	A
tert-Butylbenzene	50.0000		48.2497		-3.5	100.0	L
n-Butylbenzene	50.0000		47.6151		-4.8	100.0	L
sec-Butylbenzene	50.0000		48.4858		-3.0	100.0	L
Carbon Disulfide	0.6640	0.7166			7.9	100.0	A
Carbon Tetrachloride	0.3630	0.4185			15.3	100.0	A
Chloroacetonitrile	250		231		-7.7	100.0	Q
Chlorobenzene	2.1382	2.2215		0.300	3.9	100.0	A
1-Chlorobutane	0.3017	0.3411			13.0	100.0	A
Chlorodibromomethane	50.0000		46.1025		-7.8	100.0	L
Chloroethane	0.2386	0.2369			-0.7	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0474			-63.0	100.0	A
Chloroform	50.0000		53.9878		8.0	20.0	Q
1-Chlorohexane	50.0000		46.5437		-6.9	100.0	L
Chloromethane	0.5153	0.4429		0.100	-14.1	100.0	A
Chloroprene	0.4077	0.4553			11.7	100.0	A
3-Chloro-1-propene	0.3143	0.3546			12.8	100.0	A
o-Chlorotoluene	50.0000		48.5916		-2.8	100.0	L
p-Chlorotoluene	50.0000		48.3545		-3.3	100.0	L
Cyclohexane	50.0000		50.5206		1.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1230			-4.1	100.0	A
1,2-Dibromoethane	0.6135	0.6181			0.7	100.0	A
Dibromomethane	0.1929	0.1996			3.5	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		47.2602		-5.5	100.0	L
1,2-Dichlorobenzene	1.6905	1.7199			1.7	100.0	A
1,3-Dichlorobenzene	1.7148	1.8056			5.3	100.0	A
1,4-Dichlorobenzene	1.8695	1.8580			-0.6	100.0	A
Dichlorodifluoromethane	0.4406	0.4611			4.7	100.0	A
1,1-Dichloroethane	0.5657	0.5972		0.100	5.6	100.0	A
1,2-Dichloroethene, Total	100		106		6.3	100.0	L
1,2-Dichloroethane	0.4307	0.4434			2.9	100.0	A
1,1-Dichloroethene	0.3989	0.4044			1.4	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4293			6.2	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4131			6.4	100.0	A
Dichlorofluoromethane	0.5742	0.5888			2.5	100.0	A
1,1-Dichloro-2-Propanone	250		242		-3.2	100.0	L
2,2-Dichloropropane	0.3327	0.3868			16.3	100.0	A
1,3-Dichloropropane	1.1698	1.1635			-0.5	100.0	A
1,2-Dichloropropane	0.3178	0.3415			7.4	20.0	A
1,1-Dichloropropene	0.3783	0.4184			10.6	100.0	A
cis-1,3-Dichloropropene	50.0000		46.0652		-7.9	100.0	L
trans-1,3-Dichloropropene	50.0000		47.1187		-5.8	100.0	L
1,3-Dichloropropene, Total	100		93.1838		-6.8	100.0	L
Diisobutylene	50.0000		51.1501		2.3	100.0	L
Diisopropyl ether	0.8443	0.9264			9.7	100.0	A
1,4-Dioxane	0.0033	0.0034			2.8	100.0	A
Ethyl Acetate	0.2547	0.2516			-1.2	100.0	A
Ethyl ether	0.1901	0.1937			1.9	100.0	A
Ethyl Methacrylate	50.0000		43.3676		-13.3	100.0	L
Ethyl tert-butyl ether	50.0000		51.3371		2.7	100.0	L
Ethylbenzene	50.0000		49.8929		-0.2	20.0	L
Freon 113	0.2737	0.2623			-4.2	100.0	A
Heptane	50.0000		47.5869		-4.8	100.0	L
Hexachlorobutadiene	0.4314	0.4350			0.8	100.0	A
Hexachloroethane	50.0000		46.0014		-8.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.4900			1.3	100.0	A
2-Hexanone	250		238		-4.7	100.0	L
Iodomethane	50.0000		67.9538		35.9	100.0	Q
Isobutyl alcohol	500		454		-9.2	100.0	L
Isopropyl Alcohol	0.0167	0.0160			-4.3	100.0	A
Isopropylbenzene	50.0000		47.0676		-5.9	100.0	L
p-Isopropyltoluene	50.0000		47.5179		-5.0	100.0	L
Methyl acetate	0.0545	0.0502			-7.9	100.0	A
Methyl acrylate	50.0000		49.1232		-1.8	100.0	L
Methacrylonitrile	50.0000		52.8009		5.6	100.0	L
Methyl cyclohexane	1.0036	1.0852			8.1	100.0	A
Methyl methacrylate	50.0000		45.8976		-8.2	100.0	L
Methyl t-Butyl Ether	0.7715	0.7682			-0.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		249		-0.5	100.0	L
Methylene Chloride	50.0000		55.1025		10.2	100.0	Q
Naphthalene	50.0000		45.0891		-9.8	100.0	Q
Nitrobenzene	500		450		-10.0	100.0	Q
2-Nitropropane	250		232		-7.1	100.0	L
Octane	50.0000		45.1359		-9.7	100.0	L
Pentachloroethane	0.6478	0.6583			1.6	100.0	A
Pentane	0.1681	0.1594			-5.2	100.0	A
n-Propanol	0.0219	0.0226			3.1	100.0	A
Propionitrile	0.0412	0.0415			0.7	100.0	A
n-Propylbenzene	50.0000		48.9680		-2.1	100.0	L
Styrene	50.0000		47.6014		-4.8	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7521			8.7	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.8910		0.300	-8.4	100.0	A
Tetrachloroethene	0.6720	0.6889			2.5	100.0	A
Tetrahydrofuran	0.0755	0.0776			2.8	100.0	A
Toluene	50.0000		49.9432		-0.1	20.0	L
Total Xylenes	150		145		-3.2	100.0	L
1,2,3-Trichlorobenzene	50.0000		48.3088		-3.4	100.0	L
1,2,4-Trichlorobenzene	50.0000		46.2476		-7.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.4913			11.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5779			-2.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-019

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3491			5.5	100.0	A
Trichlorofluoromethane	0.5623	0.5387			-4.2	100.0	A
1,2,3-Trichloropropane	0.3120	0.2789			-10.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		48.3422		-3.3	100.0	L
1,3,5-Trimethylbenzene	50.0000		49.0251		-1.9	100.0	L
Vinyl Acetate	50.0000		51.3609		2.7	100.0	L
Vinyl Chloride	0.3904	0.3748			-4.0	20.0	A
o-Xylene	50.0000		46.2749		-7.5	100.0	L
mp-Xylene	100		98.8916		-1.1	100.0	L
4-Bromofluorobenzene	50.0000		41.0901		-17.8	100.0	L
Dibromofluoromethane	0.3368	0.2745			-18.5	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8746		-10.3	100.0	L
Toluene-d8	2.5776	2.1876			-15.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042321.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.58	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-042015

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-019

Matrix (soil/water): WATER Lab Sample ID: 2066115001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042321.D

Level (low/med): Date Received: 4/20/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2170429	88								0
02	2170430LCSLO	87								0
03	MRC-MW-10A-0	80								0
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 04/29/15

Lab File ID (Standard): 12042901 Time Analyzed: 1504

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49121	6.36				
	UPPER LIMIT	63857	6.86				
	LOWER LIMIT	34385	5.86				
	SAMPLE NO.						
01	2170429	50044	6.36				
02	2170430LCSLO	50288	6.36				
03	MRC-MW-10A-0	50275	6.36				
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	56413	6.33				
UPPER LIMIT	73337	6.83				
LOWER LIMIT	39489	5.83				
SAMPLE NO.						
01 2ND-0.1	51755	6.36				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	04/29/15	1504	8.36			
02	2170429	2170429	04/29/15	1545	8.36			
03	2170430LCSLO	2170430	04/29/15	1609	8.36			
04	MRC-MW-10A-0	2066115005	04/29/15	1753	8.36			
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2170429

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Lab File ID: 12042902 Lab Sample ID: 2170429

Instrument ID: MS12 Date Extracted: 04/29/15

Matrix: (soil/water) WATER Date Analyzed: 04/29/15

Level:(low/med) LOW Time Analyzed: 1545

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2170430LCSLO	2170430	12042903	04/29/15
02	MRC-MW-10A-0	2066115005	12042907	04/29/15
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2170429

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Matrix: (soil/water) WATER Lab Sample ID: 2170429

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12042902

Level: (low/med) LOW Date Received: 04/29/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 04/29/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/29/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Matrix Spike - Sample No.: 2170430LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0621630	89	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM019

Instrument ID: MS12 Calibration Date: 04/29/15 Time: 1504

Lab File ID: 12042901 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.13e-003	3.5e-003	1.0812799	0.00001	18.00	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6392582	0.6392582	0.00001	-10.22	30.00	AVRG

FORM VII SV

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-019 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2066115003	MRC-MW-102B-042015	
2066115004	MRC-MW-52A-042015	
2066115005	MRC-MW-10A-042015	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015

- 12 -

LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0916																										
BLK	1.00	0920			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0924			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0927			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0931			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0935			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0938			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0942			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0945			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0949			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0955			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0959			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1020																										
ZZZZZZ	1.00	1024																										
ZZZZZZ	1.00	1028																										
ZZZZZZ	1.00	1031																										
ZZZZZZ	1.00	1035																										
ZZZZZZ	1.00	1038																										
ZZZZZZ	1.00	1042																										
ZZZZZZ	1.00	1045																										
ZZZZZZ	1.00	1049																										
ZZZZZZ	5.00	1053																										
ZZZZZZ	10.00	1100																										
ZZZZZZ	10.00	1103																										
ZZZZZZ	1.00	1107																										
ZZZZZZ	1.00	1110																										
ZZZZZZ	1.00	1114																										
ZZZZZZ	10.00	1120																										
ZZZZZZ	1.00	1124																										
ZZZZZZ	1.00	1127																										
ZZZZZZ	1.00	1131																										
ZZZZZZ	1.00	1135																										
ZZZZZZ	1.00	1140																										
ZZZZZZ	1.00	1144																										
ZZZZZZ	1.00	1148																										
ZZZZZZ	1.00	1151																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1155																										
ZZZZZZ	1.00	1158																										
ZZZZZZ	1.00	1202																										
ZZZZZZ	1.00	1206																										
ZZZZZZ	1.00	1209																										
ZZZZZZ	1.00	1213																										
ZZZZZZ	1.00	1217																										
ZZZZZZ	1.00	1220																										
ZZZZZZ	1.00	1224																										
ZZZZZZ	1.00	1228																										
ZZZZZZ	1.00	1231																										
ZZZZZZ	1.00	1235																										
ZZZZZZ	1.00	1239																										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1251																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1302																										
ZZZZZZ	1.00	1305																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	10.00	1312																										
ZZZZZZ	10.00	1316																										
ZZZZZZ	10.00	1320																										
CCV6	1.00	1323			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	1327			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1331			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2167541	1.00	1356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2167542	1.00	1400			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066115003	1.00	1403			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066115004	1.00	1407			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066115005	1.00	1410			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1414																										
ZZZZZZ	1.00	1418																										
ZZZZZZ	1.00	1421																										
ZZZZZZ	1.00	1425																										
ZZZZZZ	1.00	1429																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
CCV7	1.00	1432			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	1436			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1440			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1443																										
ZZZZZZ	10.00	1451																										
2066115004	10.00	1455															X											
ZZZZZZ	10.00	1459																										
ZZZZZZ	10.00	1502																										
ZZZZZZ	10.00	1506																										
ZZZZZZ	10.00	1509																										
ZZZZZZ	10.00	1513																										
CCV8	1.00	1517			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB7	1.00	1520			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1524			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1530																										
ZZZZZZ	1.00	1534																										
ZZZZZZ	1.00	1538																										
ZZZZZZ	1.00	1541																										

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM019|MRC GW 2015

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-019

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B042215 0916

Start Date: 4/22/2015 **End Date:** 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	09:16																									
BLK	1.00	09:20					X																				
STANDARD 1	1.00	09:24					X																				
STANDARD 2	1.00	09:27					X																				
STANDARD 3	1.00	09:31					X																				
STANDARD 4	1.00	09:35					X																				
STANDARD 5	1.00	09:38					X																				
ICV	1.00	09:42					X																				
ICB1	1.00	09:45					X																				
LLICV	1.00	09:49					X																				
ICS-A1	1.00	09:55					X																				
ICS-AB1	1.00	09:59					X																				
ZZZZZZ	1.00	10:20																									
ZZZZZZ	1.00	10:24																									
ZZZZZZ	1.00	10:28																									
ZZZZZZ	1.00	10:31																									
ZZZZZZ	1.00	10:35																									
ZZZZZZ	1.00	10:38																									
ZZZZZZ	1.00	10:42																									
ZZZZZZ	1.00	10:45																									
ZZZZZZ	1.00	10:49																									
ZZZZZZ	5.00	10:53																									
ZZZZZZ	10.00	11:00																									
ZZZZZZ	10.00	11:03																									
ZZZZZZ	1.00	11:07																									
ZZZZZZ	1.00	11:10																									
ZZZZZZ	1.00	11:14																									
ZZZZZZ	10.00	11:20																									
ZZZZZZ	1.00	11:24																									
ZZZZZZ	1.00	11:27																									
ZZZZZZ	1.00	11:31																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM019|MRC GW 2015

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-019

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B042215 0916

Start Date: 4/22/2015 **End Date:** 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	11:35																										
ZZZZZZ	1.00	11:40																										
ZZZZZZ	1.00	11:44																										
ZZZZZZ	1.00	11:48																										
ZZZZZZ	1.00	11:51																										
ZZZZZZ	1.00	11:55																										
ZZZZZZ	1.00	11:58																										
ZZZZZZ	1.00	12:02																										
ZZZZZZ	1.00	12:06																										
ZZZZZZ	1.00	12:09																										
ZZZZZZ	1.00	12:13																										
ZZZZZZ	1.00	12:17																										
ZZZZZZ	1.00	12:20																										
ZZZZZZ	1.00	12:24																										
ZZZZZZ	1.00	12:28																										
ZZZZZZ	1.00	12:31																										
ZZZZZZ	1.00	12:35																										
ZZZZZZ	1.00	12:39																										
ZZZZZZ	1.00	12:47																										
ZZZZZZ	1.00	12:51																										
ZZZZZZ	1.00	12:54																										
ZZZZZZ	1.00	12:58																										
ZZZZZZ	1.00	13:02																										
ZZZZZZ	1.00	13:05																										
ZZZZZZ	1.00	13:09																										
ZZZZZZ	10.00	13:12																										
ZZZZZZ	10.00	13:16																										
ZZZZZZ	10.00	13:20																										
CCV6	1.00	13:23					X																					
CCB5	1.00	13:27					X																					
LLCCV	1.00	13:31					X																					

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
2167541	1.00	13:56					X																					
2167542	1.00	14:00					X																					
2066115003	1.00	14:03					X																					
2066115004	1.00	14:07					X																					
2066115005	1.00	14:10					X																					
ZZZZZZ	1.00	14:14																										
ZZZZZZ	1.00	14:18																										
ZZZZZZ	1.00	14:21																										
ZZZZZZ	1.00	14:25																										
ZZZZZZ	1.00	14:29																										
CCV7	1.00	14:32					X																					
CCB6	1.00	14:36					X																					
LLCCV	1.00	14:40					X																					
ZZZZZZ	1.00	14:43																										
ZZZZZZ	10.00	14:51																										
2066115004	10.00	14:55																										
ZZZZZZ	10.00	14:59																										
ZZZZZZ	10.00	15:02																										
ZZZZZZ	10.00	15:06																										
ZZZZZZ	10.00	15:09																										
ZZZZZZ	10.00	15:13																										
CCV8	1.00	15:17					X																					
CCB7	1.00	15:20					X																					
LLCCV	1.00	15:24					X																					
ZZZZZZ	1.00	15:30																										
ZZZZZZ	1.00	15:34																										
ZZZZZZ	1.00	15:38																										
ZZZZZZ	1.00	15:41																										

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-019

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0916												
BLK	BLK	0920	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0924	101		101		100		101		99		100	
STANDARD 2	STANDARD 2	0927	101		101		98		99		98		98	
STANDARD 3	STANDARD 3	0931	97		113		95		97		97		99	
STANDARD 4	STANDARD 4	0935	102		101		101		102		103		104	
STANDARD 5	STANDARD 5	0938	102		101		101		101		100		102	
ICV	ICV	0942	99		97		97		97		107		104	
ICB1	ICB	0945	103		101		102		102		103		101	
LLICV	LLICV	0949	99		96		97		97		99		97	
ICS-A1	ICSA	0955	92		101		93		101		101		102	
ICS-AB1	ICSAB	0959	96		101		98		105		100		106	
CHECK	ZZZZZZ	1020												
CHECK	ZZZZZZ	1024												
2167667	ZZZZZZ	1028												
2167668	ZZZZZZ	1031												
2066142001	ZZZZZZ	1035												
2167669	ZZZZZZ	1038												
2167670	ZZZZZZ	1042												
2066142002	ZZZZZZ	1045												
2066142003	ZZZZZZ	1049												
2066142003L	ZZZZZZ	1053												
2066142001	ZZZZZZ	1100												
2066142002	ZZZZZZ	1103												
CCV1	ZZZZZZ	1107												
CCB1	ZZZZZZ	1110												
LLCCV	ZZZZZZ	1114												
2066142003	ZZZZZZ	1120												
CCV2	ZZZZZZ	1124												
CCB2	ZZZZZZ	1127												
LLCCV	ZZZZZZ	1131												
2167541	ZZZZZZ	1135												
CCV3	ZZZZZZ	1140												
CCB3	ZZZZZZ	1144												
LLCCV	ZZZZZZ	1148												
CCV4	ZZZZZZ	1151												
2167541	ZZZZZZ	1155												
2167542	ZZZZZZ	1158												
2066115003	ZZZZZZ	1202												
2066115004	ZZZZZZ	1206												
2066115005	ZZZZZZ	1209												
2066301002	ZZZZZZ	1213												
2066301003	ZZZZZZ	1217												
2066301004	ZZZZZZ	1220												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-019

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2066301005	ZZZZZZ	1224												
2066301008	ZZZZZZ	1228												
CCV5	ZZZZZZ	1231												
CCB4	ZZZZZZ	1235												
LLCCV	ZZZZZZ	1239												
2066142001	ZZZZZZ	1247												
2066142001S	ZZZZZZ	1251												
2066142001S	ZZZZZZ	1254												
2066142002	ZZZZZZ	1258												
2066142003	ZZZZZZ	1302												
2066142004	ZZZZZZ	1305												
2066142005	ZZZZZZ	1309												
2066142001	ZZZZZZ	1312												
2066142002	ZZZZZZ	1316												
2066142003	ZZZZZZ	1320												
CCV6	CCV	1323	106		110		109		109		112		115	
CCB5	CCB	1327	106		110		107		108		108		112	
LLCCV	LLCCV	1331	106		109		108		108		109		114	
2167541	MB for HBN 68716	1356	101		111		102		103		102		108	
2167542	LCS for HBN 6871	1400	100		109		102		102		101		107	
2066115003	MRC-MW-102B-0420	1403	100		108		101		102		98		105	
2066115004	MRC-MW-52A-04201	1407	86		102		90		97		91		99	
2066115005	MRC-MW-10A-04201	1410	95		110		96		100		97		103	
2066301002	ZZZZZZ	1414												
2066301003	ZZZZZZ	1418												
2066301004	ZZZZZZ	1421												
2066301005	ZZZZZZ	1425												
2066301008	ZZZZZZ	1429												
CCV7	CCV	1432	109		106		110		111		111		115	
CCB6	CCB	1436	107		105		107		110		109		112	
LLCCV	LLCCV	1440	107		104		108		109		109		113	
2066142001	ZZZZZZ	1443												
2066115003	ZZZZZZ	1451												
2066115004	MRC-MW-52A-04201	1455	101		104		105		107		105		109	
2066115005	ZZZZZZ	1459												
2066301002	ZZZZZZ	1502												
2066301003	ZZZZZZ	1506												
2066301004	ZZZZZZ	1509												
2066301008	ZZZZZZ	1513												
CCV8	CCV	1517	109		105		111		112		111		112	
CCB7	CCB	1520	108		105		109		110		109		113	
LLCCV	LLCCV	1524	108		105		109		109		110		112	
2066142001	ZZZZZZ	1530												
CCV9	ZZZZZZ	1534												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-019

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
CCB8	ZZZZZZ	1538												
LLCCV	ZZZZZZ	1541												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-019

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0916												
BLK	0920	100											
STANDARD 1	0924	101											
STANDARD 2	0927	100											
STANDARD 3	0931	97											
STANDARD 4	0935	101											
STANDARD 5	0938	103											
ICV	0942	99											
ICB	0945	103											
LLICV	0949	98											
ICSA	0955	100											
ICSAB	0959	104											
ZZZZZZ	1020												
ZZZZZZ	1024												
ZZZZZZ	1028												
ZZZZZZ	1031												
ZZZZZZ	1035												
ZZZZZZ	1038												
ZZZZZZ	1042												
ZZZZZZ	1045												
ZZZZZZ	1049												
ZZZZZZ	1053												
ZZZZZZ	1100												
ZZZZZZ	1103												
ZZZZZZ	1107												
ZZZZZZ	1110												
ZZZZZZ	1114												
ZZZZZZ	1120												
ZZZZZZ	1124												
ZZZZZZ	1127												
ZZZZZZ	1131												
ZZZZZZ	1135												
ZZZZZZ	1140												
ZZZZZZ	1144												
ZZZZZZ	1148												
ZZZZZZ	1151												
ZZZZZZ	1155												
ZZZZZZ	1158												
ZZZZZZ	1202												
ZZZZZZ	1206												
ZZZZZZ	1209												
ZZZZZZ	1213												
ZZZZZZ	1217												
ZZZZZZ	1220												
ZZZZZZ	1224												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-019

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1228												
ZZZZZZ	1231												
ZZZZZZ	1235												
ZZZZZZ	1239												
ZZZZZZ	1247												
ZZZZZZ	1251												
ZZZZZZ	1254												
ZZZZZZ	1258												
ZZZZZZ	1302												
ZZZZZZ	1305												
ZZZZZZ	1309												
ZZZZZZ	1312												
ZZZZZZ	1316												
ZZZZZZ	1320												
CCV	1323	109											
CCB	1327	108											
LLCCV	1331	107											
MB for HBN 68716	1356	104											
LCS for HBN 6871	1400	105											
MRC-MW-102B-0420	1403	103											
MRC-MW-52A-04201	1407	102											
MRC-MW-10A-04201	1410	100											
ZZZZZZ	1414												
ZZZZZZ	1418												
ZZZZZZ	1421												
ZZZZZZ	1425												
ZZZZZZ	1429												
CCV	1432	111											
CCB	1436	109											
LLCCV	1440	108											
ZZZZZZ	1443												
ZZZZZZ	1451												
MRC-MW-52A-04201	1455	106											
ZZZZZZ	1459												
ZZZZZZ	1502												
ZZZZZZ	1506												
ZZZZZZ	1509												
ZZZZZZ	1513												
CCV	1517	111											
CCB	1520	109											
LLCCV	1524	109											
ZZZZZZ	1530												
ZZZZZZ	1534												
ZZZZZZ	1538												
ZZZZZZ	1541												

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1076	0.1000	108		90 - 110	M	4/22/2015	09:42	B042215 09
	Arsenic	0.0987	0.1000	99		90 - 110	M	4/22/2015	09:42	B042215 09
	Barium	0.1058	0.1000	106		90 - 110	M	4/22/2015	09:42	B042215 09
	Beryllium	0.1085	0.1000	108		90 - 110	M	4/22/2015	09:42	B042215 09
	Cadmium	0.1031	0.1000	103		90 - 110	M	4/22/2015	09:42	B042215 09
	Chromium	0.1093	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Cobalt	0.1069	0.1000	107		90 - 110	M	4/22/2015	09:42	B042215 09
	Copper	0.1086	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Lead	0.1056	0.1000	106		90 - 110	M	4/22/2015	09:42	B042215 09
	Manganese	0.1091	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Molybdenum	0.1092	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Nickel	0.1015	0.1000	102		90 - 110	M	4/22/2015	09:42	B042215 09
	Selenium	0.0982	0.1000	98		90 - 110	M	4/22/2015	09:42	B042215 09
	Silver	0.1038	0.1000	104		90 - 110	M	4/22/2015	09:42	B042215 09
	Thallium	0.1029	0.1000	103		90 - 110	M	4/22/2015	09:42	B042215 09
	Vanadium	0.1096	0.1000	110		90 - 110	M	4/22/2015	09:42	B042215 09
LLICV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/22/2015	09:49	B042215 09
	Arsenic	0.0032	0.0030	107		70 - 130	M	4/22/2015	09:49	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Chromium	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	09:49	B042215 09
	Copper	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Manganese	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Nickel	0.0047	0.0050	94		70 - 130	M	4/22/2015	09:49	B042215 09
	Selenium	0.0053	0.0050	106		70 - 130	M	4/22/2015	09:49	B042215 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	09:49	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0969	0.1000	97		90 - 110	M	4/22/2015	13:23	B042215 09
	Arsenic	0.0965	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Barium	0.0981	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Beryllium	0.0937	0.1000	94		90 - 110	M	4/22/2015	13:23	B042215 09
	Cadmium	0.0929	0.1000	93		90 - 110	M	4/22/2015	13:23	B042215 09
	Chromium	0.0984	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Cobalt	0.0965	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Copper	0.0968	0.1000	97		90 - 110	M	4/22/2015	13:23	B042215 09
	Lead	0.0988	0.1000	99		90 - 110	M	4/22/2015	13:23	B042215 09
	Manganese	0.0979	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Molybdenum	0.0983	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Nickel	0.0924	0.1000	92		90 - 110	M	4/22/2015	13:23	B042215 09
	Selenium	0.0929	0.1000	93		90 - 110	M	4/22/2015	13:23	B042215 09
	Silver	0.0951	0.1000	95		90 - 110	M	4/22/2015	13:23	B042215 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Vanadium	0.0993	0.1000	99		90 - 110	M	4/22/2015	13:23	B042215 09
LLCCV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/22/2015	13:31	B042215 09
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	13:31	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	13:31	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Chromium	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	13:31	B042215 09
	Copper	0.0048	0.0050	96		70 - 130	M	4/22/2015	13:31	B042215 09
	Lead	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Manganese	0.0051	0.0050	102		70 - 130	M	4/22/2015	13:31	B042215 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Nickel	0.0046	0.0050	92		70 - 130	M	4/22/2015	13:31	B042215 09
	Selenium	0.0046	0.0050	92		70 - 130	M	4/22/2015	13:31	B042215 09
	Silver	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	13:31	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	13:31	B042215 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0961	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Arsenic	0.0957	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Barium	0.0972	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Beryllium	0.0936	0.1000	94		90 - 110	M	4/22/2015	14:32	B042215 09
	Cadmium	0.0918	0.1000	92		90 - 110	M	4/22/2015	14:32	B042215 09
	Chromium	0.0967	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Cobalt	0.0959	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Copper	0.0952	0.1000	95		90 - 110	M	4/22/2015	14:32	B042215 09
	Lead	0.0973	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Manganese	0.0985	0.1000	98		90 - 110	M	4/22/2015	14:32	B042215 09
	Molybdenum	0.0993	0.1000	99		90 - 110	M	4/22/2015	14:32	B042215 09
	Nickel	0.0901	0.1000	90		90 - 110	M	4/22/2015	14:32	B042215 09
	Selenium	0.0930	0.1000	93		90 - 110	M	4/22/2015	14:32	B042215 09
	Silver	0.0954	0.1000	95		90 - 110	M	4/22/2015	14:32	B042215 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Vanadium	0.0979	0.1000	98		90 - 110	M	4/22/2015	14:32	B042215 09
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/22/2015	14:40	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	14:40	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Chromium	0.0020	0.0020	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/22/2015	14:40	B042215 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/22/2015	14:40	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	14:40	B042215 09
	Manganese	0.0051	0.0050	102		70 - 130	M	4/22/2015	14:40	B042215 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/22/2015	14:40	B042215 09
	Nickel	0.0046	0.0050	92		70 - 130	M	4/22/2015	14:40	B042215 09
	Selenium	0.0049	0.0050	98		70 - 130	M	4/22/2015	14:40	B042215 09
	Silver	0.0020	0.0020	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	14:40	B042215 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0977	0.1000	98		90 - 110	M	4/22/2015	15:17	B042215 09
	Arsenic	0.0968	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Barium	0.0968	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Beryllium	0.0948	0.1000	95		90 - 110	M	4/22/2015	15:17	B042215 09
	Cadmium	0.0924	0.1000	92		90 - 110	M	4/22/2015	15:17	B042215 09
	Chromium	0.0971	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Cobalt	0.0969	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Copper	0.0972	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Lead	0.0984	0.1000	98		90 - 110	M	4/22/2015	15:17	B042215 09
	Manganese	0.0993	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
	Molybdenum	0.0987	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
	Nickel	0.0916	0.1000	92		90 - 110	M	4/22/2015	15:17	B042215 09
	Selenium	0.0947	0.1000	95		90 - 110	M	4/22/2015	15:17	B042215 09
	Silver	0.0969	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Thallium	0.0965	0.1000	96		90 - 110	M	4/22/2015	15:17	B042215 09
	Vanadium	0.0987	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/22/2015	15:24	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	15:24	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	15:24	B042215 09
	Chromium	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	15:24	B042215 09
	Copper	0.0048	0.0050	96		70 - 130	M	4/22/2015	15:24	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Manganese	0.0052	0.0050	104		70 - 130	M	4/22/2015	15:24	B042215 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/22/2015	15:24	B042215 09
	Nickel	0.0047	0.0050	94		70 - 130	M	4/22/2015	15:24	B042215 09
	Selenium	0.0051	0.0050	102		70 - 130	M	4/22/2015	15:24	B042215 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	09:45	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	09:45	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	09:45	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	09:45	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	13:27	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	13:27	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	13:27	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	13:27	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	14:36	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	14:36	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	14:36	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	14:36	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	15:20	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	15:20	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	15:20	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	15:20	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0004				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
	Arsenic	0.0003				-0.00300 - -0.00300	4/22/2015	09:55	B042215 0916 (
	Barium	0.0004				-0.01000 - -0.01000	4/22/2015	09:55	B042215 0916 (
	Beryllium	0.00002				-0.001000 - -0.001000	4/22/2015	09:55	B042215 0916 (
	Cadmium	0.0011			*	-0.00100 - -0.00100	4/22/2015	09:55	B042215 0916 (
	Chromium	0.0006				-0.00400 - -0.00400	4/22/2015	09:55	B042215 0916 (
	Cobalt	0.0007				-0.00600 - -0.00600	4/22/2015	09:55	B042215 0916 (
	Copper	0.0012				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Lead	0.0001				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
	Manganese	0.0013				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Molybdenum	2.1760	2.00000	109		80 - 120%	4/22/2015	09:55	B042215 0916 (
	Nickel	0.0008				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Selenium	0.0001				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Silver	0.0005				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Thallium	0.00002				-0.001000 - -0.001000	4/22/2015	09:55	B042215 0916 (
	Vanadium	0.0001				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/22/2015	09:59	B042215 0916 (
	Arsenic	0.0226	0.02000	113		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Barium	0.0004				-0.00500 - -0.00500	4/22/2015	09:59	B042215 0916 (
	Beryllium	0.00003				-0.001000 - -0.001000	4/22/2015	09:59	B042215 0916 (
	Cadmium	0.0110	0.01000	110		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Chromium	0.0208	0.02000	104		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Cobalt	0.0407	0.04000	102		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Copper	0.0201	0.02000	100		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Lead	0.0002				-0.00200 - -0.00200	4/22/2015	09:59	B042215 0916 (
	Manganese	0.0215	0.02000	108		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Molybdenum	2.2086	2.00000	110		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Nickel	0.0375	0.04000	94		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Selenium	0.0210	0.02000	105		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Silver	0.0209	0.02000	104		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Thallium	0.00001				-0.001000 - -0.001000	4/22/2015	09:59	B042215 0916 (
	Vanadium	0.0446	0.04000	112		80 - 120%	4/22/2015	09:59	B042215 0916 (

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68716						
2167541	MB for HBN 68716 [MDIG/50471	MB	QC-WAT	4/22/15	45.0	50.0	
2167542	LCS for HBN 68716 [MDIG/50471	LCS	QC-WAT	4/22/15	45.0	50.0	
2066115003	MRC-MW-102B-042015	SAM	WATER	4/22/15	45.0	50.0	
2066115004	MRC-MW-52A-042015	SAM	WATER	4/22/15	45.0	50.0	
2066115005	MRC-MW-10A-042015	SAM	WATER	4/22/15	45.0	50.0	

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2167541			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/22/2015	13:56	B042215 0916 0
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/22/2015	13:56	B042215 0916 0
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/22/2015	13:56	B042215 0916 0
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/22/2015	13:56	B042215 0916 0
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2167542									
	Antimony	mg/L	0.2220	0.2170		98		80 - 120	M
	Arsenic	mg/L	0.2220	0.2114		95		80 - 120	M
	Barium	mg/L	2.2220	2.2545		101		80 - 120	M
	Beryllium	mg/L	0.2220	0.2293		103		80 - 120	M
	Cadmium	mg/L	0.2220	0.2123		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2200		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2169		98		80 - 120	M
	Copper	mg/L	0.2220	0.2136		96		80 - 120	M
	Lead	mg/L	0.2220	0.2252		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2233		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2237		101		80 - 120	M
	Nickel	mg/L	0.2220	0.2157		97		80 - 120	M
	Selenium	mg/L	0.2220	0.2034		92		80 - 120	M
	Silver	mg/L	0.1110	0.1144		103		80 - 120	M
	Thallium	mg/L	0.2220	0.2181		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2199		99		80 - 120	M

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- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-019 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2066115003	MRC-MW-102B-042015	
2066115004	MRC-MW-52A-042015	
2066115005	MRC-MW-10A-042015	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0846												X													
ICAL2	1.00	0849												X													
ICAL3	1.00	0852												X													
ICAL4	1.00	0855												X													
ICAL5	1.00	0858												X													
ICV1	1.00	0901												X													
ICB1	1.00	0904												X													
CRDL1	1.00	0910												X													
CCV1	1.00	0914												X													
HIGH	1.00	0917												X													
ICS-A1	1.00	0920												X													
ICS-AB1	1.00	0923												X													
2167004	1.00	0931												X													
2167005	1.00	0934												X													
ZZZZZZ	5.00	0937																									
ZZZZZZ	5.00	0940																									
ZZZZZZ	5.00	0943																									
ZZZZZZ	5.00	0946																									
ZZZZZZ	5.00	0950																									
ZZZZZZ	5.00	0953																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	0959																									
CCV2	1.00	1002												X													
CCB1	1.00	1005												X													
ZZZZZZ	2.00	1008																									
2066115003	1.00	1011												X													
2066115004	1.00	1014												X													
2066115005	1.00	1018												X													
ZZZZZZ	5.00	1021																									
ZZZZZZ	5.00	1024																									
ZZZZZZ	5.00	1027																									
ZZZZZZ	5.00	1030																									
ZZZZZZ	5.00	1034																									
ZZZZZZ	5.00	1037																									
CCV3	1.00	1040												X													
CCB2	1.00	1043												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1046																								
ZZZZZZ	1.00	1049																								
ZZZZZZ	1.00	1052																								
ZZZZZZ	1.00	1056																								
ZZZZZZ	5.00	1059																								
ZZZZZZ	5.00	1102																								
ZZZZZZ	5.00	1105																								
ZZZZZZ	5.00	1108																								
ZZZZZZ	5.00	1112																								
ZZZZZZ	5.00	1115																								
ZZZZZZ	1.00	1118																								
ZZZZZZ	1.00	1121																								
ZZZZZZ	5.00	1124																								
ZZZZZZ	5.00	1127																								
ZZZZZZ	5.00	1130																								
ZZZZZZ	5.00	1133																								
ZZZZZZ	5.00	1137																								
ZZZZZZ	1.00	1140																								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1146																								
ZZZZZZ	1.00	1149																								
ZZZZZZ	5.00	1153																								
ZZZZZZ	1.00	1156																								
ZZZZZZ	1.00	1159																								
ZZZZZZ	1.00	1203																								
ZZZZZZ	1.00	1207																								
ZZZZZZ	1.00	1210																								
ZZZZZZ	5.00	1213																								
ZZZZZZ	5.00	1216																								
ZZZZZZ	5.00	1219																								
ZZZZZZ	5.00	1222																								
ZZZZZZ	1.00	1225																								
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1231																								
ZZZZZZ	1.00	1234																								
ZZZZZZ	1.00	1237																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1240																										
ZZZZZZ	1.00	1243																										
ZZZZZZ	1.00	1246																										
ZZZZZZ	1.00	1250																										
CCV7	1.00	1256											X															
CCB7	1.00	1259											X															
LLCCV	1.00	1302											X															
ICS-A2	1.00	1305											X															
ICS-AB2	1.00	1308											X															
ZZZZZZ	1.00	1350																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	1.00	1357																										
ZZZZZZ	1.00	1400																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1409																										
ZZZZZZ	1.00	1412																										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	1.00	1425																										
ZZZZZZ	1.00	1428																										
ZZZZZZ	1.00	1431																										
ZZZZZZ	1.00	1434																										
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1450																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1513																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1519																										
ZZZZZZ	1.00	1522																										
ZZZZZZ	5.00	1525																										
ZZZZZZ	5.00	1528																										
ZZZZZZ	25.00	1532																										
ZZZZZZ	5.00	1535																										
ZZZZZZ	5.00	1538																										
ZZZZZZ	5.00	1541																										
ZZZZZZ	5.00	1545																										
ZZZZZZ	1.00	1548																										
ZZZZZZ	1.00	1551																										
ZZZZZZ	1.00	1554																										
ZZZZZZ	1.00	1557																										
ZZZZZZ	1.00	1600																										
ZZZZZZ	1.00	1604																										
ZZZZZZ	1.00	1607																										

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.003	1.000	100		90 - 110	P	4/22/2015	09:01	042215A 30
CCV	Iron	2.532	2.500	101		90 - 110	P	4/22/2015	09:14	042215A 30
CCV	Iron	2.522	2.500	101		90 - 110	P	4/22/2015	10:02	042215A 30
CCV	Iron	2.440	2.500	98		90 - 110	P	4/22/2015	10:40	042215A 30
CCV	Iron	2.608	2.500	104		90 - 110	P	4/22/2015	12:56	042215A 30
LLCCV	Iron	0.070	0.060	117		70 - 130	P	4/22/2015	13:02	042215A 30

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.058	0.060	97		70 - 130	P	4/22/2015	09:10	042215A 3

6010C 3015

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	09:04	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	10:05	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	10:43	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	12:59	042215A 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	114.1	125.0	91		80 - 120%	4/22/2015	09:20	042215A 3015
ICSAB									
	Iron	115.9	125.0	93		80 - 120%	4/22/2015	09:23	042215A 3015
ICSA									
	Iron	121.1	125.0	97		80 - 120%	4/22/2015	13:05	042215A 3015
ICSAB									
	Iron	124.9	125.0	100		80 - 120%	4/22/2015	13:08	042215A 3015

6010C 3015
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68515						
2167004	MB for HBN 68515 [MDIG/50455	MB	QC-WAT	4/21/15	45.0	50.0	
2167005	LCS for HBN 68515 [MDIG/50455	LCS	QC-WAT	4/21/15	45.0	50.0	
2066115003	MRC-MW-102B-042015	SAM	WATER	4/21/15	45.0	50.0	
2066115004	MRC-MW-52A-042015	SAM	WATER	4/21/15	45.0	50.0	
2066115005	MRC-MW-10A-042015	SAM	WATER	4/21/15	45.0	50.0	

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2167004			**QC-WATER**								
	Iron	0.029	J		0.067	0.022	0.067	P	4/22/2015	09:31	042215A 3015

6010C 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2167005									
	Iron	mg/L	1.11	1.174		106		80 - 120	P

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-019 Method Type: 7470A SOW No.:

Contract: TMM019|MRC GW 2015 Lab Code: CAS Case No.: SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2066115003	MRC-MW-102B-042015	
2066115003S	MRC-MW-102B-042015S	Matrix Spike
2066115003SD	MRC-MW-102B-042015SD	Matrix Spike Duplicate
2066115004	MRC-MW-52A-042015	
2066115005	MRC-MW-10A-042015	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1205																X												
Standard #1 (0.2ppb	1.00	1206																X												
	1.00	1207																X												
	1.00	1208																X												
	1.00	1209																X												
	1.00	1210																X												
ICV1	1.00	1212																X												
ICV2	1.00	1214																X												
ICB1	1.00	1215																X												
ZZZZZZ	1.00	1216																												
ZZZZZZ	1.00	1217																												
ZZZZZZ	1.00	1218																												
ZZZZZZ	1.00	1219																												
ZZZZZZ	1.00	1220																												
ZZZZZZ	1.00	1221																												
ZZZZZZ	1.00	1222																												
ZZZZZZ	1.00	1223																												
ZZZZZZ	1.00	1224																												
ZZZZZZ	1.00	1225																												
ZZZZZZ	1.00	1226																												
ZZZZZZ	1.00	1227																												
ZZZZZZ	1.00	1228																												
ZZZZZZ	1.00	1229																												
ZZZZZZ	1.00	1230																												
ZZZZZZ	1.00	1232																												
ZZZZZZ	1.00	1233																												
ZZZZZZ	1.00	1234																												
ZZZZZZ	1.00	1235																												
ZZZZZZ	1.00	1236																												
ZZZZZZ	1.00	1237																												
ZZZZZZ	1.00	1238																												
ZZZZZZ	1.00	1239																												
ZZZZZZ	1.00	1240																												
ZZZZZZ	1.00	1241																												
ZZZZZZ	1.00	1242																												
ZZZZZZ	1.00	1243																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1244																										
ZZZZZZ	1.00	1245																										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1248																										
ZZZZZZ	1.00	1249																										
ZZZZZZ	1.00	1250																										
ZZZZZZ	1.00	1251																										
ZZZZZZ	1.00	1252																										
ZZZZZZ	1.00	1253																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1255																										
ZZZZZZ	1.00	1256																										
ZZZZZZ	1.00	1257																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1300																										
ZZZZZZ	1.00	1301																										
ZZZZZZ	1.00	1302																										
ZZZZZZ	1.00	1303																										
ZZZZZZ	1.00	1304																										
ZZZZZZ	1.00	1305																										
ZZZZZZ	1.00	1306																										
ZZZZZZ	1.00	1307																										
ZZZZZZ	1.00	1308																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1310																										
ZZZZZZ	1.00	1312																										
ZZZZZZ	1.00	1313																										
ZZZZZZ	1.00	1314																										
ZZZZZZ	1.00	1315																										
ZZZZZZ	1.00	1316																										
CCV5	1.00	1325																X										
CCB5	1.00	1326																X										
2168200	1.00	1327																X										
2168201	1.00	1328																X										
ZZZZZZ	1.00	1329																										
ZZZZZZ	1.00	1331																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1332																X									
CCB6	1.00	1333																X									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1344																									
CCV7	1.00	1345																X									
CCB7	1.00	1346																X									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
2066115003	1.00	1352																X									
2066115003S	1.00	1353																X									
2066115003SD	1.00	1354																X									
2066115004	1.00	1356																X									
2066115005	1.00	1357																X									
CCV8	1.00	1358																X									
CCB8	1.00	1359																X									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM019|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-019

Instrument ID Number: Cetac Hg Method: CV Run Number: 042315W

Start Date: 4/23/2015 End Date: 4/23/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1411																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1413																								
ZZZZZZ	1.00	1414																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1416																								
ZZZZZZ	1.00	1417																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1420																								
ZZZZZZ	1.00	1422																								
ZZZZZZ	1.00	1423																								
ZZZZZZ	1.00	1424																								
ZZZZZZ	1.00	1425																								
ZZZZZZ	1.00	1426																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1436																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1439																								
ZZZZZZ	1.00	1440																								

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0037	0.004	92		90 - 110	CV	4/23/2015	12:12	042315W
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	12:14	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:25	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:32	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:45	042315W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/23/2015	13:58	042315W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	12:15	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:26	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:33	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:46	042315W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/23/2015	13:59	042315W

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Method:** CV

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68924						
2168200	MB for HBN 68924 [MDIG/50496	MB	QC-WAT	4/23/15	25.0	25.0	
2168201	LCS for HBN 68924 [MDIG/50496	LCS	QC-WAT	4/23/15	25.0	25.0	
2066115003	MRC-MW-102B-042015	SAM	WATER	4/23/15	25.0	25.0	
2066115003S	MRC-MW-102B-042015S	MS	WATER	4/23/15	25.0	25.0	
2066115003SD	MRC-MW-102B-042015SD	MSD	WATER	4/23/15	25.0	25.0	
2066115004	MRC-MW-52A-042015	SAM	WATER	4/23/15	25.0	25.0	
2066115005	MRC-MW-10A-042015	SAM	WATER	4/23/15	25.0	25.0	

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2168200			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/23/2015	13:27	042315W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2168201									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

7470A
- 5a -
MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** _____ **SAS No.:** _____

Matrix: WATER **Sample ID:** 2066115003 **Client ID:** MRC-MW-102B-042015S **LIMS ID:** 2168204

Percent Solids for Sample: 0.00 **Spiked ID:** 2066115003S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066115003 **Client ID:** MRC-MW-102B-042015SD **LIMS ID:** 2168205

Percent Solids for Sample: 0.00 **Spiked ID:** 2066115003SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-019

Contract: TMM019|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066115003S **Client ID:** MRC-MW-102B-042015SD **LIMS ID:** 2168205

Percent Solids for Sample: 0.00 **Duplicate ID:** 2066115003SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0053		0.0053		0.0		CV

W 1511439

1511439 14348/#1

Analytical Laboratory Services, Inc.

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #:	1 of 1
ALSI Quote #:	

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT ☐ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [x] -Y Debra.Musser@alsglobal.com

Fax? ☐ -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)	Enter Number of Containers Per Sample or Field Results Below.
2066115 004	4/20/15	1040	C	GW				X	Subcontract: ALS Salt Lake City
									Level IV Package Needed
									TetraTech EDD also required

Receipt Information (completed by Receiving Lab)

Cooler Temp: ____ Cooler #: ____

Therm. ID _____

	Y	N
Custody Seals Present?		X
(if present) Seals Intact?		
Received on Ice?	X	
COC/Labels Agree?	X	
Cont. in Good Cond.?	X	
Correct Containers?	X	
Correct Sample Volumes?	X	
Correct Preservation?	X	

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time)

Reviewed By (initials/date/time)

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	4/24/15	1430	2 [signature] ALS SLC	4/24/15	9:6
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐ Standard; [x] CLP-like; ☐ USACE; ☐

Special Processing: USACE ☐ Navy ☐ DOD ☐

State Samples Collected In: ☐ NY ☐ NJ ☐ PA ☐ NC ☐

Reportable to PADEP? Yes ☐

PWSID # _____

Sample Disposal: Lab ☐ Special ☐

EDDS: Format Type- ADR/SEDD

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Middle-town

Project/Task/Site: 1511483

Date/Time of Receipt: 4/24/15 10:03

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 10027	2 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: Meredith Blundell (Signature) Meredith Blundell (Printed Name) 4/24/15 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.dot

Revised 1/1/15

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511256; 1511257; 1511258; 1211437; 1511439

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1562 (147840)

General Set Information: There were ten field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 444330) was less than 1/2 the CRDL. The recovery for the LCS (444331) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511256001. The percent recoveries were outside of performance limits. The relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APR15C-02/03/11/20.

Thomas Bosch — April 29, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Workorder: 34-1511439
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

ALS Work Order #'s & Sample #( )'s: 1511256 (001,02); 1511257 (001); 1511258 (001-04); 1511437 (001-02); 1511439 (001)
ELMS Batch/HBN ID: 1562 (147840)
Prep Date: 04/28/2015 Analysis Date: 04/28/2015 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence:\\HPCHEM\1\SEQUENCE\CLO4\2015\APR\28APR15P.s
Instrument MDL: **0.06µg/L** Reported PQL: **0.2µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 27894. Dilutions of Working Standard Solution ID 27896 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 08/14/2014, sequence 14AUG14P.s Offline Quantitation Method: CLO4OFF1.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89. Tuned: 8/14/2014 Tune Checked: 8/14/2014
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 2 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 85% Eluent A1; 15% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.52
4.0	0.52
5.0	0.25
14.5	0.25
15.0	0.52
17.5	0.52

QC DATA: 5.0µL of QC Solution Horizon ID 27897 was used for LCS 444331; Target = 5.0µg/L. ASTM type II water was used for LMB 444330.

MS/MSD: MS/MSD was performed on sample 1511256001 (Client ID: 2065944 003). 5.0µl of Working Standard Solution Horizon ID 27895 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335). The ion ratio of m/z 83 to 85 often fails at levels near or below the Limit of Detection (LODV). The ion ratio failed for the LODV's-1,2 (444328/335) and field samples 1511256002 and 1511257001.
3) Sample data can be viewed at two directories within the ALS system: \ALSLTWS013\DataReview\HBN# or throughNuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, many of the chromatographic peaks require manual integration. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APRC-02/03/11/20.

Batch Worklist

Batch: ELMS/ 1562 Created: 4/28/2015 13:02 Instrument: HBN: 147840

Rule: EPA 6850, Water Analyst: T. Bosch Status: WP

Workorder: 1511256
Workorder: 1511257
Workorder: 1511258
Workorder: 1511437
Workorder: 1511439

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	444326	CCV for HBN 147840 [ELMS/1562]				CCV	3		E6850..C3Q	5311		5/6/2015	
2	444327	RLVS for HBN 147840 [ELMS/1562				RLVS	3		E6850..C3Q	5311		5/6/2015	
3	444328	LODV for HBN 147840 [ELMS/1562				LODV	3		E6850..C3Q	5311		5/6/2015	
4	444329	ICS for HBN 147840 [ELMS/1562]				ICS	3		E6850..C3Q	5311		5/6/2015	
5	444330	LMB for HBN 147840 [ELMS/1562]				LMB	3		E6850...3Q	5311		5/6/2015	
6	444331	LCS for HBN 147840 [ELMS/1562]				LCS	3		E6850...3Q	5311		5/6/2015	
7	1511256001	2065944 003				SAMPLE	3	1511256001-A	E6850....3	5480	5/15/2015	5/6/2015	
8	444332	2065944 003(1511256001MS)				MS	3		E6850...3Q	5311		5/6/2015	
9	444333	2065944 003(1511256001MSD)				MSD	3		E6850...3Q	5311		5/6/2015	
10	1511256002	2065944 004				SAMPLE	3	1511256002-A	E6850....3	5480	5/15/2015	5/6/2015	
11	1511257001	2065603 011				SAMPLE	3	1511257001-A	E6850....3	5480	5/13/2015	5/6/2015	
12	1511258001	2065612 001				SAMPLE	3	1511258001-A	E6850....3	5480	5/14/2015	5/6/2015	
13	1511258002	2065612 006				SAMPLE	3	1511258002-A	E6850....3	5480	5/14/2015	5/6/2015	
14	1511258003	2065612 007				SAMPLE	3	1511258003-A	E6850....3	5480	5/14/2015	5/6/2015	
15	1511258004	2065612 008				SAMPLE	3	1511258004-A	E6850....3	5480	5/14/2015	5/6/2015	
16	1511437001	2066604 004				SAMPLE	3	1511437001-A	E6850....3	5480	5/20/2015	5/8/2015	
17	1511437002	2066604 005				SAMPLE	3	1511437002-A	E6850....3	5480	5/20/2015	5/8/2015	
18	1511439001	2066115 004				SAMPLE	3	1511439001-A	E6850....3	5480	5/18/2015	5/8/2015	
19	444334	CCV for HBN 147840 [ELMS/1562]				CCV	3		E6850..C3Q	5311		5/6/2015	
20	444335	LODV for HBN 147840 [ELMS/1562				LODV	3		E6850..C3Q	5311		5/6/2015	

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511439

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 444330
Analyzed: 04/28/2015 14:25

Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 444331
Analyzed: 04/28/2015 14:46
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1511256001	**MS:**	444332				**MSD:**	444333			
Analyzed:	04/28/2015 15:05	**Analyzed:**	04/28/2015 15:24				**Analyzed:**	04/28/2015 15:43			
Dilution:	1	**Dilution:**	1				**Dilution:**	1			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Perchlorate	0.800	4.62	5	* 76.4	85.3	112.8	4.74	78.9	2.57	0.0	20.0

Parent sample not a sample of interest.

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1511439**

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	444326			**CCV:**	444334	
Analyzed:	04/28/2015 13:09			**Analyzed:**	04/28/2015 18:53	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.0	25.0	104	24.6	25.0	98.4

Interference Check Sample

ICSA:	444329
Analyzed:	04/28/2015 14:06
Units:	ug/L
Criteria:	± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	444328			**LODV:**	444335	
Analyzed:	04/28/2015 13:47			**Analyzed:**	04/28/2015 19:12	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.145	0.100	145	0.163	0.100	* 163

Comments

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect.
The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	4/29/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JULY 22, 2015**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION – VOC / DISSOLVED GASES / TOTAL METALS / MISC.**
LOCKHEED – MIDDLE RIVER CENTER (MRC)
SAMPLE DELIVERY GROUP (SDG) – 2066301R

SAMPLES: 9/Water/ VOC

MRC-MW-101A-042115	MRC-MW-101B-042115	MRC-MW-27A-042115
MRC-MW-27B-042115	MRC-MW-27C-042115	MRC-MW-29A-042115
MRC-MW-77B-042115	MRC-MW-79B-042115	TB-042115

5/Water/ TOTAL METALS

MRC-MW-27A-042115	MRC-MW-27B-042115	MRC-MW-29A-042115
MRC-MW-77B-042115	MRC-MW-79B-042115	

2/Water/ DISSOLVED GASES / ALKALINITY / AMMONIA / CHLORIDE / NITRATE-N / NITRITE-N / ORTHOPHOSPHATE / SULFATE / TOTAL ORGANIC CARBON (TOC) / TOTAL DISSOLVED SOLIDS (TDS)

MRC-MW-27A-042115	MRC-MW-27B-042115

Overview

The sample set for Lockheed MRC, SDG 2066301R consisted of eight (8) water samples and one (1) trip blank. The samples were analyzed for volatile organic compounds (VOC), total metals, dissolved gases, alkalinity, chloride, nitrate-N, nitrite-N, orthophosphate-P, sulfate, TOC, and TDS as outlined above.

The samples were collected by Tetra Tech on April 21, 2015 and analyzed by Test America Laboratories, Inc. All analyses were conducted in accordance with SW-846 Methods 8260C, 6010C, 6020A, 7470A, EPA Methods RSK-175, 300.0, 680, 6850, 903.0, and 904.0 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method blank results, surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), internal standard recoveries, ICP interference results, laboratory duplicate results, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- No major noncompliances were noted.

Minor

- The following contaminants were detected in the laboratory method blanks or trip blank at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Bromomethane(1)	0.44 ug/L	2.2 ug/L
Trichloroethene(2)	1.0 ug/L	5.0 ug/L
1,4-Dichlorobenzene(3)	0.27 ug/L	1.35 ug/L

1 – Maximum concentration found in the trip blank (TB-042115) affecting all samples.

2 - Maximum concentrations found in preparation blank 2168253 affecting sample MRC-MW-79B-042115.

3 - Maximum concentrations found in preparation blank 2170306 affecting sample MRC-MW-101B-042115.

An action level of 5X the maximum contaminant level for bromomethane, trichloroethene, and 1,4-dichlorobenzene were used as the minimum detectable concentration. Dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The detected results for bromomethane less than the action limit were qualified (U) due to blank contamination.

- The VOC continuing calibration percent differences (%Ds) were greater than the quality control limit of 20% for bromomethane, carbon disulfide, dichlorodifluoromethane, and methyl cyclohexane for instrument MS15 on 04/23/15 @11:17. The detected and nondetected results for the aforementioned compounds in samples MRC-MW-29A-042115, MRC-MW-77B-042115, MRC-MW-27B-042115, and MRC-MW-79B-042115 were qualified as estimated (J) and (UJ), respectively.

- The VOC LCS (2168254) had percent recoveries greater than the quality control limit for trans-1,2-dichloroethene and methylene chloride. The detected results for trans-1,2-dichloroethene in samples MW-29A-042115, MRC-MW-77B-042115, and MRC-MW-27B-042115 were qualified as estimated (J). No action was taken for methylene chloride because methylene chloride was not detected in the associated samples.

- The VOC LCS (2168334) had percent recoveries greater than the quality control limit for trans-1,2-dichloroethene, methylene chloride, and a recovery for cis-1,3-dichloropropene less than the quality control limit. The detected result for trans-1,2-dichloroethene and the nondetected result for cis-1,3-dichloropropene in sample MW-79B-042115 were qualified as estimated (J) and (UJ), respectively. No action was taken for methylene chloride because methylene chloride was not detected in the associated samples.

- The VOC LCS (2169480) had percent recoveries less than the quality control limit for cis-1,3-dichloropropene and o-xylene. The detected and nondetected results for cis-1,3-dichloropropene and o-xylene in samples TB-042115, MRC-MW-101A-042115, MRC-MW-27C-042115, and MRC-MW-27A-042115 were qualified as estimated (J) and (UJ), respectively.

- The following contaminant was detected in the laboratory preparation or calibration blanks at the following maximum concentration:

Analyte	Maximum Concentration	Action Level
Ammonia	0.09 mg/L	0.45 mg/L

An action level of 5X the maximum contaminant level for ammonia was used as the minimum detectable concentration. Dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The detected result for ammonia less than the action limit was qualified (U) due to blank contamination for sample MRC-MW-27B-042115.

- Positive results below the Reporting Limit (RL) and above the detection limit were qualified as estimated, (J), due to uncertainty near the detection limit.

Notes

The VOC continuing calibration (%D) was greater than the quality control limit of 20% for bromomethane for instrument MS15 on 04/27/15 @01:46. No action was taken on this basis because the bromomethane results were previously qualified due to blank contamination.

Samples MRC-MW-27B-042115 and MRC-MW-79B-042115 required dilutions due to concentrations for several VOC compounds greater than the linear calibration range of the instrument.

Sample MRC-MW-27A-042115 required a dilution due to a chloride concentration greater than the linear calibration range of the instrument.

Molybdenum was detected in the ICB at a concentration of 0.0007 mg/L. No action was taken on this basis because molybdenum was not detected in any associated samples.

Iron was detected in a CCB analyzed on 4/22/15 @12:40 at a concentration of 0.023 mg/L. No action was taken on this basis because all detections for iron were greater than the action level of 0.115 mg/L.

Chloride and sulfate were detected in several CCBs at maximum concentrations of 0.27 mg/L and 0.44 mg/L, respectively. No action was taken on this basis because all detections for chloride and sulfate were greater than the action levels of 1.35 mg/L and 2.2 mg/L, respectively.

The preparation blanks for dissolved gases, metals, and wet chemistry parameters were reported to the reporting limit not the MDL. No action was taken on this basis.

Mercury was not analyzed in sample MRC-MW-29A-042115. The reason for the exclusion of this metal in sample MW-29A was not documented on the chain of custody.

Nondetected results were reported to the method detection limit (MDL).

Executive Summary

Laboratory Performance: Blank contamination resulted in the qualification of bromomethane and ammonia data. Continuing calibration %D noncompliances resulted in the qualification of VOC data. LCS percent recovery noncompliances resulted in the qualification of VOC data.

Other Factors Affecting Data Quality: Positive results below the Reporting Limit (RL) and above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those issues affecting data quality.

Tetra Tech
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-101A-042115			MRC-MW-101B-042115			MRC-MW-27A-042115			MRC-MW-27B-042115		
SDG: 2066301R	LAB_ID	2066301006			2066301007			2066301004			2066301005		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.34	J	P
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.82	J	P	5.6			1.9			9.9		
1,1-DICHLOROETHENE		1			1.8			2			18.8		
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	U		58.9	U	
2-BUTANONE		1.8	U		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		4.8	J	P	3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		1.7			1		
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.7	U	A	0.62	U	A	0.57	U	A	0.39	UJ	C
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U		0.23	UJ	C
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		7			0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.33	J	P	0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		39.6			2			43.5					
CIS-1,3-DICHLOROPROPENE		0.31	UJ	E	0.31	U		0.31	UJ	E	0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		1.1			0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-27B-042115-DL			MRC-MW-27C-042115			MRC-MW-29A-042115			MRC-MW-77B-042115		
SDG: 2066301R	LAB_ID	2066301005			2066301009			2066301002			2066301003		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE					0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE					0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE					0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE					0.28	U		4.8			18		
1,1-DICHLOROETHENE					0.29	U		3.1			2.8		
1,2,3-TRICHLOROBENZENE					0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE					0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE					1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE					0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE					0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE					0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE					0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE					0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE					0.27	U		0.27	U		0.27	U	
1,4-DIOXANE					58.9	U		58.9	U		58.9	U	
2-BUTANONE					1.8	U		1.8	U		1.8	U	
2-HEXANONE					1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE					1.5	U		1.5	U		1.5	U	
ACETONE					3.1	U		3.1	U		3.1	U	
BENZENE					0.23	U		0.23	U		14		
BROMOCHLOROMETHANE					0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE					0.27	U		0.27	U		0.27	U	
BROMOFORM					0.4	U		0.4	U		0.4	U	
BROMOMETHANE					0.53	U	A	0.42	U	A	0.59	U	A
CARBON DISULFIDE					0.23	U		0.23	UJ	C	0.23	UJ	C
CARBON TETRACHLORIDE					0.31	U		0.31	U		0.31	U	
CHLOROBENZENE					0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE					0.45	U		0.45	U		0.45	U	
CHLOROETHANE					0.33	U		0.33	U		0.33	U	
CHLOROFORM					0.21	U		0.21	U		0.21	U	
CHLOROMETHANE					0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		455			1	U		4.5			3.9		
CIS-1,3-DICHLOROPROPENE					0.31	UJ	E	0.31	U		0.31	U	
CYCLOHEXANE					0.29	U		0.29	U		0.73	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-79B-042115			MRC-MW-79B-042115-DL			TB-042115		
SDG: 2066301R	LAB_ID	2066301008			2066301008			2066301001		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U	
1,1-DICHLOROETHANE		2.4						0.28	U	
1,1-DICHLOROETHENE		4.3						0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U					1.5	U	
1,2-DIBROMOETHANE		0.28	U					0.28	U	
1,2-DICHLOROBENZENE		0.38	U					0.38	U	
1,2-DICHLOROETHANE		0.32	U					0.32	U	
1,2-DICHLOROPROPANE		0.24	U					0.24	U	
1,3-DICHLOROBENZENE		0.25	U					0.25	U	
1,4-DICHLOROBENZENE		0.27	U					0.27	U	
1,4-DIOXANE		58.9	U					58.9	U	
2-BUTANONE		1.8	U					1.8	U	
2-HEXANONE		1.3	U					1.3	U	
4-METHYL-2-PENTANONE		1.5	U					1.5	U	
ACETONE		3.1	U					3.1	U	
BENZENE		1.7						0.23	U	
BROMOCHLOROMETHANE		0.32	U					0.32	U	
BROMODICHLOROMETHANE		0.27	U					0.27	U	
BROMOFORM		0.4	U					0.4	U	
BROMOMETHANE		0.39	UJ	C				0.44	J	P
CARBON DISULFIDE		0.23	UJ	C				0.23	U	
CARBON TETRACHLORIDE		0.31	U					0.31	U	
CHLOROBENZENE		0.19	U					0.19	U	
CHLORODIBROMOMETHANE		0.45	U					0.45	U	
CHLOROETHANE		0.33	U					0.33	U	
CHLOROFORM		0.21	U					0.21	U	
CHLOROMETHANE		0.31	U					0.31	U	
CIS-1,2-DICHLOROETHENE		102						1	U	
CIS-1,3-DICHLOROPROPENE		0.31	UJ	E				0.31	UJ	E
CYCLOHEXANE		0.61	J	P				0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-101A-042115			MRC-MW-101B-042115			MRC-MW-27A-042115			MRC-MW-27B-042115		
SDG: 2066301R	LAB_ID	2066301006			2066301007			2066301004			2066301005		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U		0.33	UJ	C
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		23.6			6.7		
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	
O-XYLENE		1	UJ	E	0.33	U		1	UJ	E	0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U		1.1		
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		1.7			0.26	U		4.4			6	J	E
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		7.1			2			103					
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		1.9			0.3	U		20.8			9.9		

PROJ_NO: 06247	NSAMPLE	MRC-MW-27B-042115-DL			MRC-MW-27C-042115			MRC-MW-29A-042115			MRC-MW-77B-042115		
SDG: 2066301R	LAB_ID	2066301005			2066301009			2066301002			2066301003		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE					0.33	U		0.33	UJ	C	0.33	UJ	C
ETHYLBENZENE					0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE					0.22	U		0.22	U		0.36	J	P
M+P-XYLENES					0.52	U		0.52	U		0.52	U	
METHYL ACETATE					0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE					0.3	U		0.3	UJ	C	0.62	J	CP
METHYL TERT-BUTYL ETHER					0.33	U		3.8			117		
METHYLENE CHLORIDE					0.45	U		0.45	U		0.45	U	
O-XYLENE					1	UJ	E	0.33	U		0.33	U	
STYRENE					0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE					0.35	U		0.35	U		0.35	U	
TOLUENE					0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE					0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE					0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		1250			0.33	U		10.6			8		
TRICHLOROFLUOROMETHANE					0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE					0.3	U		0.77	J	P	1.8		

PROJ_NO: 06247	NSAMPLE	MRC-MW-79B-042115			MRC-MW-79B-042115-DL			TB-042115		
SDG: 2066301R	LAB_ID	2066301008			2066301008			2066301001		
FRACTION: OV	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									

PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE	0.33	UJ	C				0.33	U	
ETHYLBENZENE	0.34	U					0.34	U	
ISOPROPYLBENZENE	0.22	U					0.22	U	
M+P-XYLENES	0.52	U					0.52	U	
METHYL ACETATE	0.32	U					0.32	U	
METHYL CYCLOHEXANE	0.3	UJ	C				0.3	U	
METHYL TERT-BUTYL ETHER	40.3						0.33	U	
METHYLENE CHLORIDE	0.45	U					0.45	U	
O-XYLENE	0.33	U					1	UJ	E
STYRENE	0.24	U					0.24	U	
TETRACHLOROETHENE	0.35	J	P				0.35	U	
TOLUENE	0.23	U					0.23	U	
TRANS-1,2-DICHLOROETHENE	4.7	J	E				0.26	U	
TRANS-1,3-DICHLOROPROPENE	0.29	U					0.29	U	
TRICHLOROETHENE				284			0.33	U	
TRICHLOROFLUOROMETHANE	0.24	U					0.24	U	
VINYL CHLORIDE	20						0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-27A-042115			MRC-MW-27B-042115		
SDG: 2066301R	LAB_ID	2066301004			2066301005		
FRACTION: OVG	SAMP_DATE	4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		5.6			0.23	U	
ETHENE		2.4			0.4	U	
METHANE		1640			6.1		

PROJ_NO: 06247	NSAMPLE	MRC-MW-27A-042115			MRC-MW-27B-042115			MRC-MW-29A-042115			MRC-MW-77B-042115		
SDG: 2066301R	LAB_ID	2066301004			2066301005			2066301002			2066301003		
FRACTION: M	SAMP_DATE	4/21/2015			4/21/2015			4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.0042			0.001	U		0.001	U		0.0014	J	P
BARIUM		0.53			0.039			0.28			0.58		
BERYLLIUM		0.0019			0.002			0.0068			0.029		
CADMIUM		0.00037	U		0.00037	U		0.00072	J	P	0.00037	U	
CHROMIUM		0.0011	J	P	0.00092	J	P	0.0011	J	P	0.0024		
COBALT		0.58			0.21			0.31			0.37		
COPPER		0.0028	J	P	0.0083			0.0099			0.019		
IRON		110			0.14			11.7			78.5		
LEAD		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
MANGANESE		28.8			0.12			3.2			19.5		
MERCURY		0.00017	U		0.00017	U					0.00017	U	
MOLYBDENUM		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
NICKEL		0.24			0.24			0.16			0.55		
SELENIUM		0.0019	U		0.0019	U		0.0019	U		0.0034	J	P
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.00049	J	P	0.0003	U		0.0003	U	
VANADIUM		0.00074	U		0.00074	U		0.00092	J	P	0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-79B-042115		
SDG: 2066301R	LAB_ID	2066301008		
FRACTION: M	SAMP_DATE	4/21/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.0014	J	P
BARIUM		0.19		
BERYLLIUM		0.0013		
CADMIUM		0.00037	U	
CHROMIUM		0.0074		
COBALT		0.22		
COPPER		0.019		
IRON		51.9		
LEAD		0.0017	J	P
MANGANESE		14		
MERCURY		0.00017	U	
MOLYBDENUM		0.00074	U	
NICKEL		0.074		
SELENIUM		0.0019	U	
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.012		

PROJ_NO: 06247	NSAMPLE	MRC-MW-27A-042115			MRC-MW-27B-042115		
SDG: 2066301R	LAB_ID	2066301004			2066301005		
FRACTION: MISC	SAMP_DATE	4/21/2015			4/21/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		44			5	J	P
AMMONIA		1.6			0.14	U	A
CHLORIDE		726			78.8		
NITRATE-N		0.037	U		0.037	U	
NITRITE-N		0.22	U		0.044	U	
ORTHOPHOSPHATE		0.0025	U		0.0047	J	P
SULFATE		3.8			7		
TOTAL DISSOLVED SOLIDS		1180			94		
TOTAL ORGANIC CARBON		3.9			1		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301001** Date Collected: 4/21/2015 00:00 Matrix: Water

Sample ID: **TB-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/27/15 04:31	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 04:31	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 04:31	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 04:31	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/27/15 04:31	JPA	A
Bromomethane	0.44J	J	ug/L	1.0	0.39	SW846 8260C		4/27/15 04:31	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/27/15 04:31	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 04:31	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 04:31	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/27/15 04:31	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/27/15 04:31	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/27/15 04:31	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 04:31	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 04:31	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/27/15 04:31	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 04:31	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/27/15 04:31	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/27/15 04:31	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 04:31	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 04:31	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 04:31	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 04:31	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 04:31	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 04:31	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 04:31	JPA	A
cis-1,3-Dichloropropene	ND	2	ug/L	1.0	0.31	SW846 8260C		4/27/15 04:31	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 04:31	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/27/15 04:31	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/27/15 04:31	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 04:31	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/27/15 04:31	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/27/15 04:31	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/27/15 04:31	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/27/15 04:31	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301001** Date Collected: 4/21/2015 00:00 Matrix: Water

Sample ID: **TB-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/27/15 04:31	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/27/15 04:31	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 04:31	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/27/15 04:31	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/27/15 04:31	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 04:31	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/27/15 04:31	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/27/15 04:31	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/27/15 04:31	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 04:31	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/27/15 04:31	JPA	A
o-Xylene	ND	3	ug/L	1.0	0.33	SW846 8260C		4/27/15 04:31	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/27/15 04:31	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260C		4/27/15 04:31	JPA	A
4-Bromofluorobenzene (S)	89.1		%	79 - 114	SW846 8260C		4/27/15 04:31	JPA	A
Dibromofluoromethane (S)	92.5		%	78 - 116	SW846 8260C		4/27/15 04:31	JPA	A
Toluene-d8 (S)	95.1		%	76 - 127	SW846 8260C		4/27/15 04:31	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301002** Date Collected: 4/21/2015 09:29 Matrix: Water

Sample ID: **MRC-MW-29A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 18:53	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 18:53	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 18:53	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 18:53	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 18:53	TMP	A
Bromomethane	0.42J	J	ug/L	1.0	0.39	SW846 8260C		4/23/15 18:53	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 18:53	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 18:53	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 18:53	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 18:53	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 18:53	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 18:53	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 18:53	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 18:53	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 18:53	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 18:53	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 18:53	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 18:53	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 18:53	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 18:53	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 18:53	TMP	A
1,1-Dichloroethane	4.8		ug/L	1.0	0.28	SW846 8260C		4/23/15 18:53	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 18:53	TMP	A
1,1-Dichloroethene	3.1		ug/L	1.0	0.29	SW846 8260C		4/23/15 18:53	TMP	A
cis-1,2-Dichloroethene	4.5		ug/L	1.0	0.32	SW846 8260C		4/23/15 18:53	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 18:53	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 18:53	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 18:53	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 18:53	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 18:53	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 18:53	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 18:53	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 18:53	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 18:53	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 18:53	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/23/15 18:53	TMP	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301002** Date Collected: 4/21/2015 09:29 Matrix: Water

Sample ID: **MRC-MW-29A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	3.8		ug/L	1.0	0.33	SW846 8260C			4/23/15 18:53	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/23/15 18:53	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/23/15 18:53	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 18:53	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/23/15 18:53	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/23/15 18:53	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/23/15 18:53	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/23/15 18:53	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/23/15 18:53	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/23/15 18:53	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 18:53	TMP	A
Trichloroethene	10.6		ug/L	1.0	0.33	SW846 8260C			4/23/15 18:53	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 18:53	TMP	A
Vinyl Chloride	0.77J	J	ug/L	1.0	0.30	SW846 8260C			4/23/15 18:53	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 18:53	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/23/15 18:53	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260C			4/23/15 18:53	TMP	A
4-Bromofluorobenzene (S)	85.8		%	79 - 114	SW846 8260C			4/23/15 18:53	TMP	A
Dibromofluoromethane (S)	92.5		%	78 - 116	SW846 8260C			4/23/15 18:53	TMP	A
Toluene-d8 (S)	94.7		%	76 - 127	SW846 8260C			4/23/15 18:53	TMP	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Barium, Total	0.28		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Beryllium, Total	0.0068		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Cadmium, Total	0.00072J	J	mg/L	0.0011	0.00037	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Chromium, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Cobalt, Total	0.31		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Copper, Total	0.0099		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Iron, Total	11.7		mg/L	0.067	0.022	SW846 6010C	4/22/15	AAM	4/22/15 12:25	SRT	E1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Manganese, Total	3.2		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Nickel, Total	0.16		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301002** Date Collected: 4/21/2015 09:29 Matrix: Water

Sample ID: **MRC-MW-29A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2
Vanadium, Total	0.00092J	J	mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:14	MO	E2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301003** Date Collected: 4/21/2015 10:58 Matrix: Water

Sample ID: **MRC-MW-77B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 19:10	TMP	A
Benzene	14.0		ug/L	1.0	0.23	SW846 8260C		4/23/15 19:10	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 19:10	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 19:10	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 19:10	TMP	A
Bromomethane	0.59J	J	ug/L	1.0	0.39	SW846 8260C		4/23/15 19:10	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 19:10	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 19:10	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:10	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 19:10	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 19:10	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:10	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 19:10	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:10	TMP	A
Cyclohexane	0.73J	J	ug/L	1.0	0.29	SW846 8260C		4/23/15 19:10	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 19:10	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 19:10	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 19:10	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 19:10	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 19:10	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:10	TMP	A
1,1-Dichloroethane	18.0		ug/L	1.0	0.28	SW846 8260C		4/23/15 19:10	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 19:10	TMP	A
1,1-Dichloroethene	2.8		ug/L	1.0	0.29	SW846 8260C		4/23/15 19:10	TMP	A
cis-1,2-Dichloroethene	3.9		ug/L	1.0	0.32	SW846 8260C		4/23/15 19:10	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 19:10	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 19:10	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:10	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 19:10	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 19:10	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 19:10	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 19:10	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 19:10	TMP	A
Isopropylbenzene	0.36J	J	ug/L	1.0	0.22	SW846 8260C		4/23/15 19:10	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 19:10	TMP	A
Methyl cyclohexane	0.62J	J	ug/L	1.0	0.30	SW846 8260C		4/23/15 19:10	TMP	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301003** Date Collected: 4/21/2015 10:58 Matrix: Water

Sample ID: **MRC-MW-77B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	117		ug/L	1.0	0.33	SW846 8260C			4/23/15 19:10	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/23/15 19:10	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/23/15 19:10	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 19:10	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/23/15 19:10	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/23/15 19:10	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/23/15 19:10	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/23/15 19:10	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/23/15 19:10	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/23/15 19:10	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 19:10	TMP	A
Trichloroethene	8.0		ug/L	1.0	0.33	SW846 8260C			4/23/15 19:10	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 19:10	TMP	A
Vinyl Chloride	1.8		ug/L	1.0	0.30	SW846 8260C			4/23/15 19:10	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 19:10	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/23/15 19:10	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260C			4/23/15 19:10	TMP	A
4-Bromofluorobenzene (S)	86.6		%	79 - 114	SW846 8260C			4/23/15 19:10	TMP	A
Dibromofluoromethane (S)	87.7		%	78 - 116	SW846 8260C			4/23/15 19:10	TMP	A
Toluene-d8 (S)	95.5		%	76 - 127	SW846 8260C			4/23/15 19:10	TMP	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Arsenic, Total	0.0014J	J	mg/L	0.0030	0.0010	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Barium, Total	0.58		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Beryllium, Total	0.029		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Chromium, Total	0.0024		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Cobalt, Total	0.37		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Copper, Total	0.019		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Iron, Total	78.5		mg/L	0.067	0.022	SW846 6010C	4/22/15	AAM	4/22/15 12:28	SRT	E1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Manganese, Total	19.5		mg/L	0.056	0.019	SW846 6020A	4/22/15	AAM	4/22/15 15:06	MO	E2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/27/15	MNP	4/27/15 12:40	MNP	E3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Nickel, Total	0.55		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301003** Date Collected: 4/21/2015 10:58 Matrix: Water

Sample ID: **MRC-MW-77B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	0.0034J	J	mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:18	MO	E2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301004** Date Collected: 4/21/2015 11:25 Matrix: Water

Sample ID: **MRC-MW-27A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/27/15 05:56	JPA	A
Benzene	1.7		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:56	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:56	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:56	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/27/15 05:56	JPA	A
Bromomethane	0.57J	J	ug/L	1.0	0.39	SW846 8260C		4/27/15 05:56	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/27/15 05:56	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:56	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:56	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/27/15 05:56	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/27/15 05:56	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:56	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/27/15 05:56	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:56	JPA	A
Cyclohexane	1.1		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:56	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/27/15 05:56	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 05:56	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/27/15 05:56	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/27/15 05:56	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:56	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:56	JPA	A
1,1-Dichloroethane	1.9		ug/L	1.0	0.28	SW846 8260C		4/27/15 05:56	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:56	JPA	A
1,1-Dichloroethene	2.0		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:56	JPA	A
cis-1,2-Dichloroethene	43.5		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:56	JPA	A
trans-1,2-Dichloroethene	4.4		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:56	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 05:56	JPA	A
cis-1,3-Dichloropropene	ND	7	ug/L	1.0	0.31	SW846 8260C		4/27/15 05:56	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:56	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/27/15 05:56	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/27/15 05:56	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:56	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/27/15 05:56	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/27/15 05:56	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/27/15 05:56	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/27/15 05:56	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301004** Date Collected: 4/21/2015 11:25 Matrix: Water

Sample ID: **MRC-MW-27A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	23.6		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:56	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/27/15 05:56	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/27/15 05:56	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:56	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/27/15 05:56	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/27/15 05:56	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/27/15 05:56	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/27/15 05:56	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/27/15 05:56	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/27/15 05:56	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:56	JPA	A
Trichloroethene	103		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:56	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:56	JPA	A
Vinyl Chloride	20.8		ug/L	1.0	0.30	SW846 8260C			4/27/15 05:56	JPA	A
o-Xylene	ND	8	ug/L	1.0	0.33	SW846 8260C			4/27/15 05:56	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/27/15 05:56	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/27/15 05:56	JPA	A
4-Bromofluorobenzene (S)	87.8		%	79 - 114		SW846 8260C			4/27/15 05:56	JPA	A
Dibromofluoromethane (S)	91.5		%	78 - 116		SW846 8260C			4/27/15 05:56	JPA	A
Toluene-d8 (S)	95.4		%	76 - 127		SW846 8260C			4/27/15 05:56	JPA	A
LIGHT HYDROCARBON GASES											
Ethane	5.6		ug/L	3.3	0.23	RSK 175			4/28/15 08:04	JSH	I
Ethene	2.4		ug/L	2.4	0.40	RSK 175			4/28/15 08:04	JSH	I
Methane	1640		ug/L	1.5	0.34	RSK 175			4/28/15 08:04	JSH	I
WET CHEMISTRY											
Alkalinity, Total	44		mg/L	5	0.8	S2320B-97			4/22/15 11:35	MBW	F
Ammonia-nitrogen, Total	1.60		mg/L	0.30	0.1	S4500NH3D	4/30/15	J1H	4/30/15 15:30	NJA	G
Chloride	726		mg/L	10.0	0.62	EPA 300.0	4/22/15	SSL	4/23/15 13:55	SSL	H
Nitrate-N	ND		mg/L	0.20	0.037	EPA 300.0	4/23/15	SSL	4/22/15 12:08	SSL	H
Nitrite-N	ND	56	mg/L	1.0	0.22	EPA 300.0	4/22/15	SSL	4/23/15 13:55	SSL	H
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			4/22/15 04:45	MBW	H
Sulfate	3.8		mg/L	2.0	0.13	EPA 300.0	4/23/15	SSL	4/22/15 12:08	SSL	H
Total Dissolved Solids	1180		mg/L	5	5	S2540C-11			4/23/15 22:00	NV	H
Total Organic Carbon (TOC)	3.9		mg/L	1.0	0.24	SW846 9060A			4/29/15 13:04	PAG	L
METALS											

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301004** Date Collected: 4/21/2015 11:25 Matrix: Water

Sample ID: **MRC-MW-27A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Arsenic, Total	0.0042		mg/L	0.0030	0.0010	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Barium, Total	0.53		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Beryllium, Total	0.0019		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Chromium, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Cobalt, Total	0.58		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Copper, Total	0.0028J	J	mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Iron, Total	110		mg/L	0.067	0.022	SW846 6010C	4/22/15	AAM	4/22/15 12:31	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Manganese, Total	28.8		mg/L	0.056	0.019	SW846 6020A	4/22/15	AAM	4/22/15 15:09	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/27/15	MNP	4/27/15 12:44	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Nickel, Total	0.24		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:21	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301005** Date Collected: 4/21/2015 13:40 Matrix: Water

Sample ID: **MRC-MW-27B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 19:28	TMP	A
Benzene	1.0		ug/L	1.0	0.23	SW846 8260C		4/23/15 19:28	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 19:28	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 19:28	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 19:28	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/23/15 19:28	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 19:28	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 19:28	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:28	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 19:28	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 19:28	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:28	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 19:28	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:28	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 19:28	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 19:28	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 19:28	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 19:28	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 19:28	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 19:28	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:28	TMP	A
1,1-Dichloroethane	9.9		ug/L	1.0	0.28	SW846 8260C		4/23/15 19:28	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 19:28	TMP	A
1,1-Dichloroethene	18.8		ug/L	1.0	0.29	SW846 8260C		4/23/15 19:28	TMP	A
cis-1,2-Dichloroethene	455		ug/L	50.0	16.0	SW846 8260C		4/27/15 07:04	JPA	A
trans-1,2-Dichloroethene	6.0	1	ug/L	1.0	0.26	SW846 8260C		4/23/15 19:28	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 19:28	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 19:28	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 19:28	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 19:28	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 19:28	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 19:28	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 19:28	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 19:28	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 19:28	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/23/15 19:28	TMP	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301005** Date Collected: 4/21/2015 13:40 Matrix: Water

Sample ID: **MRC-MW-27B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	6.7		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:28	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/23/15 19:28	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 19:28	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 19:28	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 19:28	TMP	A
Tetrachloroethene	1.1		ug/L	1.0	0.35	SW846 8260C		4/23/15 19:28	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 19:28	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/23/15 19:28	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/23/15 19:28	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 19:28	TMP	A
1,1,2-Trichloroethane	0.34J	J	ug/L	1.0	0.33	SW846 8260C		4/23/15 19:28	TMP	A
Trichloroethene	1250		ug/L	50.0	16.5	SW846 8260C		4/27/15 07:04	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 19:28	TMP	A
Vinyl Chloride	9.9		ug/L	1.0	0.30	SW846 8260C		4/23/15 19:28	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 19:28	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/23/15 19:28	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C		4/27/15 07:04	JPA	A
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C		4/23/15 19:28	TMP	A
4-Bromofluorobenzene (S)	88.8		%	79 - 114		SW846 8260C		4/23/15 19:28	TMP	A
4-Bromofluorobenzene (S)	87		%	79 - 114		SW846 8260C		4/27/15 07:04	JPA	A
Dibromofluoromethane (S)	87.3		%	78 - 116		SW846 8260C		4/23/15 19:28	TMP	A
Dibromofluoromethane (S)	92.7		%	78 - 116		SW846 8260C		4/27/15 07:04	JPA	A
Toluene-d8 (S)	97.9		%	76 - 127		SW846 8260C		4/23/15 19:28	TMP	A
Toluene-d8 (S)	94.6		%	76 - 127		SW846 8260C		4/27/15 07:04	JPA	A
LIGHT HYDROCARBON GASES										
Ethane	ND		ug/L	3.3	0.23	RSK 175		4/28/15 08:29	JSH	I
Ethene	ND		ug/L	2.4	0.40	RSK 175		4/28/15 08:29	JSH	I
Methane	6.1		ug/L	1.5	0.34	RSK 175		4/28/15 08:29	JSH	I
WET CHEMISTRY										
Alkalinity, Total	5J	J	mg/L	5	0.8	S2320B-97		4/22/15 11:46	MBW	F
Ammonia-nitrogen, Total	0.14J	J2	mg/L	0.30	0.1	S4500NH3D	4/30/15 J1H	4/30/15 15:30	NJA	G
Chloride	78.8		mg/L	2.0	0.12	EPA 300.0		4/22/15 12:22	SSL	H
Nitrate-N	ND		mg/L	0.20	0.037	EPA 300.0		4/22/15 12:22	SSL	H
Nitrite-N	ND		mg/L	0.20	0.044	EPA 300.0		4/22/15 12:22	SSL	H
Orthophosphate	0.0047J	J	mg/L	0.020	0.0025	EPA 365.3		4/22/15 04:45	MBW	H

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301005** Date Collected: 4/21/2015 13:40 Matrix: Water

Sample ID: **MRC-MW-27B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	7.0		mg/L	2.0	0.13	EPA 300.0			4/22/15 12:22	SSL	H
Total Dissolved Solids	94		mg/L	5	5	S2540C-11			4/23/15 22:00	NV	H
Total Organic Carbon (TOC)	1.0		mg/L	1.0	0.24	SW846 9060A			4/29/15 13:04	PAG	L
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Barium, Total	0.039		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Beryllium, Total	0.0020		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Chromium, Total	0.00092J	J	mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Cobalt, Total	0.21		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Copper, Total	0.0083		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Iron, Total	0.14		mg/L	0.067	0.022	SW846 6010C	4/22/15	AAM	4/22/15 12:50	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Manganese, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/27/15	MNP	4/27/15 12:45	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Nickel, Total	0.24		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Thallium, Total	0.00049J	J	mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:25	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301006** Date Collected: 4/21/2015 11:30 Matrix: Water

Sample ID: **MRC-MW-101A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/27/15 05:22	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:22	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:22	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:22	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/27/15 05:22	JPA	A
Bromomethane	0.70J	J	ug/L	1.0	0.39	SW846 8260C		4/27/15 05:22	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/27/15 05:22	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:22	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:22	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/27/15 05:22	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/27/15 05:22	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:22	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/27/15 05:22	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:22	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:22	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/27/15 05:22	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 05:22	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/27/15 05:22	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/27/15 05:22	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:22	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:22	JPA	A
1,1-Dichloroethane	0.82J	J	ug/L	1.0	0.28	SW846 8260C		4/27/15 05:22	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:22	JPA	A
1,1-Dichloroethene	1.0		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:22	JPA	A
cis-1,2-Dichloroethene	39.6		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:22	JPA	A
trans-1,2-Dichloroethene	1.7		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:22	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 05:22	JPA	A
cis-1,3-Dichloropropene	ND	2	ug/L	1.0	0.31	SW846 8260C		4/27/15 05:22	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:22	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/27/15 05:22	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/27/15 05:22	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:22	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/27/15 05:22	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/27/15 05:22	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/27/15 05:22	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/27/15 05:22	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301006** Date Collected: 4/21/2015 11:30 Matrix: Water

Sample ID: **MRC-MW-101A-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:22	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/27/15 05:22	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/27/15 05:22	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:22	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/27/15 05:22	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/27/15 05:22	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/27/15 05:22	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/27/15 05:22	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/27/15 05:22	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/27/15 05:22	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:22	JPA	A
Trichloroethene	7.1		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:22	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:22	JPA	A
Vinyl Chloride	1.9		ug/L	1.0	0.30	SW846 8260C			4/27/15 05:22	JPA	A
o-Xylene	ND	3	ug/L	1.0	0.33	SW846 8260C			4/27/15 05:22	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/27/15 05:22	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260C			4/27/15 05:22	JPA	A
4-Bromofluorobenzene (S)	85.7		%	79 - 114	SW846 8260C			4/27/15 05:22	JPA	A
Dibromofluoromethane (S)	93.1		%	78 - 116	SW846 8260C			4/27/15 05:22	JPA	A
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260C			4/27/15 05:22	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301007** Date Collected: 4/21/2015 13:42 Matrix: Water

Sample ID: **MRC-MW-101B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	4.8J	J	ug/L	10.0	3.1	SW846 8260C		4/29/15 05:05	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 05:05	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:05	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:05	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 05:05	JPA	A
Bromomethane	0.62J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 05:05	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 05:05	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 05:05	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:05	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 05:05	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 05:05	JPA	A
Chloroethane	7.0		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:05	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 05:05	JPA	A
Chloromethane	0.33J	J	ug/L	1.0	0.31	SW846 8260C		4/29/15 05:05	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:05	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 05:05	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:05	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 05:05	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 05:05	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:05	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:05	JPA	A
1,1-Dichloroethane	5.6		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:05	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:05	JPA	A
1,1-Dichloroethene	1.8		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:05	JPA	A
cis-1,2-Dichloroethene	2.0		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:05	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:05	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 05:05	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:05	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:05	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 05:05	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 05:05	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:05	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 05:05	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 05:05	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 05:05	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 05:05	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301007** Date Collected: 4/21/2015 13:42 Matrix: Water

Sample ID: **MRC-MW-101B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:05	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 05:05	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 05:05	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:05	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 05:05	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/29/15 05:05	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/29/15 05:05	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 05:05	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/29/15 05:05	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 05:05	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:05	JPA	A
Trichloroethene	2.0		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:05	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:05	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/29/15 05:05	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:05	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 05:05	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260C			4/29/15 05:05	JPA	A
4-Bromofluorobenzene (S)	99.2		%	79 - 114	SW846 8260C			4/29/15 05:05	JPA	A
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260C			4/29/15 05:05	JPA	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C			4/29/15 05:05	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301008** Date Collected: 4/21/2015 15:28 Matrix: Water

Sample ID: **MRC-MW-79B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/23/15 21:46	TMP	A
Benzene	1.7		ug/L	1.0	0.23	SW846 8260C		4/23/15 21:46	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 21:46	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 21:46	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/23/15 21:46	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/23/15 21:46	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/23/15 21:46	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/23/15 21:46	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 21:46	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/23/15 21:46	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/23/15 21:46	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 21:46	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/23/15 21:46	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/23/15 21:46	TMP	A
Cyclohexane	0.61J	J	ug/L	1.0	0.29	SW846 8260C		4/23/15 21:46	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/23/15 21:46	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/23/15 21:46	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/23/15 21:46	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/23/15 21:46	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/23/15 21:46	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/23/15 21:46	TMP	A
1,1-Dichloroethane	2.4		ug/L	1.0	0.28	SW846 8260C		4/23/15 21:46	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/23/15 21:46	TMP	A
1,1-Dichloroethene	4.3		ug/L	1.0	0.29	SW846 8260C		4/23/15 21:46	TMP	A
cis-1,2-Dichloroethene	102		ug/L	1.0	0.32	SW846 8260C		4/23/15 21:46	TMP	A
trans-1,2-Dichloroethene	4.7	1	ug/L	1.0	0.26	SW846 8260C		4/23/15 21:46	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/23/15 21:46	TMP	A
cis-1,3-Dichloropropene	ND	2	ug/L	1.0	0.31	SW846 8260C		4/23/15 21:46	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/23/15 21:46	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/23/15 21:46	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/23/15 21:46	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/23/15 21:46	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/23/15 21:46	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/23/15 21:46	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/23/15 21:46	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/23/15 21:46	TMP	A

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301008** Date Collected: 4/21/2015 15:28 Matrix: Water

Sample ID: **MRC-MW-79B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	40.3		ug/L	1.0	0.33	SW846 8260C			4/23/15 21:46	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/23/15 21:46	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/23/15 21:46	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 21:46	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/23/15 21:46	TMP	A
Tetrachloroethene	0.35J	J	ug/L	1.0	0.35	SW846 8260C			4/23/15 21:46	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/23/15 21:46	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/23/15 21:46	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/23/15 21:46	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/23/15 21:46	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 21:46	TMP	A
Trichloroethene	284		ug/L	10.0	3.3	SW846 8260C			4/27/15 06:30	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/23/15 21:46	TMP	A
Vinyl Chloride	20.0		ug/L	1.0	0.30	SW846 8260C			4/23/15 21:46	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/23/15 21:46	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/23/15 21:46	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/23/15 21:46	TMP	A
1,2-Dichloroethane-d4 (S)	113		%	62 - 133		SW846 8260C			4/27/15 06:30	JPA	A
4-Bromofluorobenzene (S)	85.4		%	79 - 114		SW846 8260C			4/23/15 21:46	TMP	A
4-Bromofluorobenzene (S)	85.8		%	79 - 114		SW846 8260C			4/27/15 06:30	JPA	A
Dibromofluoromethane (S)	96.1		%	78 - 116		SW846 8260C			4/27/15 06:30	JPA	A
Dibromofluoromethane (S)	89.4		%	78 - 116		SW846 8260C			4/23/15 21:46	TMP	A
Toluene-d8 (S)	96.8		%	76 - 127		SW846 8260C			4/23/15 21:46	TMP	A
Toluene-d8 (S)	95.9		%	76 - 127		SW846 8260C			4/27/15 06:30	JPA	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Arsenic, Total	0.0014J	J	mg/L	0.0030	0.0010	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Barium, Total	0.19		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Beryllium, Total	0.0013		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Chromium, Total	0.0074		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Cobalt, Total	0.22		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Copper, Total	0.019		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Iron, Total	51.9		mg/L	0.067	0.022	SW846 6010C	4/22/15	AAM	4/22/15 12:43	SRT	D1
Lead, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Manganese, Total	14.0		mg/L	0.056	0.019	SW846 6020A	4/22/15	AAM	4/22/15 15:13	MO	D2

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301008** Date Collected: 4/21/2015 15:28 Matrix: Water

Sample ID: **MRC-MW-79B-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/27/15	MNP	4/27/15 12:46	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Nickel, Total	0.074		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2
Vanadium, Total	0.012		mg/L	0.0022	0.00074	SW846 6020A	4/22/15	AAM	4/22/15 14:29	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301009** Date Collected: 4/21/2015 15:20 Matrix: Water

Sample ID: **MRC-MW-27C-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/27/15 05:39	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:39	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:39	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:39	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/27/15 05:39	JPA	A
Bromomethane	0.53J	J	ug/L	1.0	0.39	SW846 8260C		4/27/15 05:39	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/27/15 05:39	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/27/15 05:39	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:39	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/27/15 05:39	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/27/15 05:39	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:39	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/27/15 05:39	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/27/15 05:39	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:39	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/27/15 05:39	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 05:39	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/27/15 05:39	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/27/15 05:39	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/27/15 05:39	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/27/15 05:39	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/27/15 05:39	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:39	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:39	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/27/15 05:39	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:39	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/27/15 05:39	JPA	A
cis-1,3-Dichloropropene	ND	2	ug/L	1.0	0.31	SW846 8260C		4/27/15 05:39	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/27/15 05:39	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/27/15 05:39	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/27/15 05:39	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/27/15 05:39	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/27/15 05:39	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/27/15 05:39	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/27/15 05:39	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/27/15 05:39	JPA	A

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID: **2066301009** Date Collected: 4/21/2015 15:20 Matrix: Water

Sample ID: **MRC-MW-27C-042115** Date Received: 4/21/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:39	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/27/15 05:39	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/27/15 05:39	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:39	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/27/15 05:39	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/27/15 05:39	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/27/15 05:39	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/27/15 05:39	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/27/15 05:39	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/27/15 05:39	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:39	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/27/15 05:39	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/27/15 05:39	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/27/15 05:39	JPA	A
o-Xylene	ND	3	ug/L	1.0	0.33	SW846 8260C			4/27/15 05:39	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/27/15 05:39	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260C			4/27/15 05:39	JPA	A
4-Bromofluorobenzene (S)	85.7		%	79 - 114	SW846 8260C			4/27/15 05:39	JPA	A
Dibromofluoromethane (S)	92.8		%	78 - 116	SW846 8260C			4/27/15 05:39	JPA	A
Toluene-d8 (S)	92.9		%	76 - 127	SW846 8260C			4/27/15 05:39	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

APPENDIX C

SUPPORT DOCUMENTATION

SDG 2066301R

SAMPLE ID MRC-MW-27B-042115

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	Final Volume (ML)	AVE RRF	CONCENTRATION ug/L
681184	50	187408	30	5	0.3311	1246.40

Sample Volume (ML)

5

Trichlorethene = 1,250 ug/L

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150427.b\15042720
Lab Smp Id: 2066301005 Client Smp ID: MRC-MW-27B-042115
Inj Date : 27-APR-2015 07:04
Operator : JPA Inst ID: ms15.i
Smp Info : 2066301005;;1;;;;;50
Misc Info : ZZ VOMS 35700 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150427.b\15-8260b
Meth Date : 27-Apr-2015 14:21 joshua Quant Type: ISTD
Cal Date : 17-APR-2015 12:23 Cal File: 15041709.D
Als bottle: 20
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	50.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	Compound Not Detected.						
4 Bromomethane	94	1.668	1.668	(0.427)	2037	0.55788	27.8939(a)	
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	Compound Not Detected.						
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	Compound Not Detected.						
10 1,1-Dichloroethene	61	2.142	2.148	(0.548)	3423	0.37792	18.8961(a)	
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	Compound Not Detected.						
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.201	3.195	(0.819)	83447	9.09214	454.607	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	212693	27.8121	1390.61	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	248518	32.4185	1620.92	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	681184	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	187408	24.9319	1246.60	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.860	4.860	(0.822)	656467	28.3835	1419.17	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

SDG 2066301R
SAMPLE ID MRC-MW-27A-042115

SAMPLE CALC INITIAL CF	DILUTION	COMPOUND OF INTEREST /	Final Extract Volume (ML)	Initial Extract Volume (UL)	CONCENTRATION PPM
25.39481	1	429116	1	1000	16897.78

Methane = 16897.8 ug/L

ALS Environmental Services

RSK175 METHOD

Data file : \\ALMDTWS014\TargetData\Chem\gc03.i\3-2015\03150428.b\MDSA005.d
Lab Smp Id: 2066301004 Client Smp ID: MRC-MW-27A-042115
Inj Date : 28-APR-2015 08:04
Operator : JSH Inst ID: gc03.i
Smp Info : 2066301004
Misc Info : ZZ SVGC 37819 RSK175W
Comment :
Method : \\ALMDTWS014\TargetData\Chem\gc03.i\3-2015\03150428.b\RSK175.m
Meth Date : 28-Apr-2015 12:10 gc03.i Quant Type: ESTD
Cal Date : 02-APR-2015 20:30 Cal File: MD2A009.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: all.sub
Target Version: 4.14
Processing Host: NAMDTW7006

Concentration Formula: Amt * DF * Uf * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction factor
Vt	1.000	Volume of final extract (uL)(1000 low, 2
Vo	1.000	VOLUME INITIAL
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ppmv)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
1 METHANE	0.493	0.496	-0.003	429116	16897.8	16897.8	
2 ETHENE	1.906	1.903	0.003	413	8.68550	8.68550(a)	
3 ETHANE	2.373	2.370	0.003	1356	28.0365	28.0365	
4 PROPANE	4.513	4.476	0.037	98	1.44885	1.44885(a)	
5 ISO-BUTANE	Compound Not Detected.						
6 N-BUTANE	6.706	6.700	0.006	1165	13.1397	13.1397(M)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

PROJECT TITLE:
Tetra Tech
MRC-GW 2015 Sampling

Data Deliverable Group TMM-020
ALS#2066301

CLP-Like
DATA PACKAGE

SAMPLES COLLECTED
April 21, 2015

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-020

Sample Management

This report contains the results of the analysis of nine (9) ground water samples collected on April 21, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 21, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Nine (9) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2168253, bromomethane was detected at 0.62J µg/L.
- In 2168333, bromomethane was detected at 0.63J µg/L; trichloroethene was detected at 1.0 µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2168254, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits.
- In 2168334, trans-1,2-dichloroethene and methylene chloride were recovered above the control limits; cis-1,3-dichloropropene was recovered below the control limits.
- In 2169480, cis-1,3-dichloropropene and o-xylene were recovered below the control limits.

Internal Standards. All internal standard results met method criteria.

Light Hydrocarbon Gases by RSK-175

Sample Handling. Two (2) water samples were submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Total Metals by SW-846 Method 6020A

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the ICB at 0.0008 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3a represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Four (4) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2066301003 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. Two (2) aqueous samples were analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The samples were distilled and analyzed within the 28-day holding time established for the method.

Calibration. An initial calibration was properly established on the day of analysis and a second source standard was analyzed throughout the analysis to verify the calibration. The recoveries were within the QC limits.

Blank. A preparation blank, identified as 2171207, was distilled and analyzed with the samples. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. A laboratory control sample, identified as 2171208, was distilled and analyzed with the samples. The recovery was within QC limits.

Anions by EPA 300.0

Sample handling. Two (2) aqueous samples were analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The samples were run within method recommended holding time for chloride, nitrate-nitrogen, and sulfate. Sample 2066301004 (MRC-MW-27A-042115) was originally run within method recommended holding time for nitrite-nitrogen, but required further analysis that exceeded that holding time. Sample 2066301005 (MRC-MW-27B-042115) was run within method recommended holding time for nitrite-nitrogen.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limits.

Blanks. Initial and continuing blanks were analyzed with the samples. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2168162, 2167614 and SSL, were analyzed initially and every 20 samples. Recoveries were within the QC limits.

Orthophosphate by EPA 365.3

Sample handling. Two (2) aqueous samples were analyzed for orthophosphate by EPA Method 365.3. The samples were analyzed within the hold time established for the method.

Calibration. An initial calibration was established. Initial and continuing calibration verification standards were analyzed on the day of analysis to verify the calibration. All recoveries were within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Orthophosphate was not detected above the reporting limit in the blanks.

Total Alkalinity by SM 2320B

Sample handling. Two (2) aqueous samples were analyzed for total alkalinity by Standard Method 2320B. The samples were analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the samples. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

Total Dissolved Solids by SM2540C

Sample handling. Two (2) aqueous samples were analyzed for total dissolved solids by Standard Method 2540C. The samples were analyzed within the 7-day holding time established for the method.

Blank. A preparation blank, identified as 2168386, was analyzed with the samples. Total dissolved solids were not detected above the reporting limit in the blank.

Laboratory Control Sample. A laboratory control sample, identified as 2168387, was analyzed with the samples. The recovery was within the QC limits.

Duplicate. A duplicate analysis, identified as 2168389, was performed on sample 2066301004 (MRC-MW-27A-042115). The relative percent difference between the results was not within the QC limits. The sample was inadvertently not commented on in LIMS.

Total Organic Carbon by SW-846 9060

Sample handling. Two (2) aqueous samples were analyzed for total organic carbon by SW-846 Method 9060. The samples were analyzed within the 28-day holding time established for the method.

Calibration. On the day of analysis, a four-point low curve calibration was properly established. Initial and continuing calibration verification standards were analyzed throughout the run. The recoveries were all within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Total organic carbon was not detected above the reporting limit in the blanks.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 5/15/2015

DJM

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER No 028485

2066301

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME
112FC06247	MCC GW 2015	Tony Adamavage	301 528-3021	ALS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Walt Pryor		Walt Pryor	301 991-3914	
		CARRIER/WAYBILL NUMBER		CITY, STATE

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	P	G	P	P	P	P	P	COMMENTS
									PRESERVATIVE USED	HCl	HNO3	HCl	—	H2SO4	H2SO4	—		
									TYPE OF ANALYSIS	VOCs	Total metals	RSK-175	Alkalinity	Ammonia	TOC	Cl04	Cl, NO2, NO3, SO4, PO4, TDS	
4-21	—	TB-042115	TB	—	—	QC	G	3		3X								
	0929	MCC-MW-29A-042115	29A			GW		4		X	X							
	1058	MCC-MW-77B-042115	77B					4		X	X							
	1125	MCC-MW-27A-042115	27A					12		X	1X	3X	X	1X	1X	X	X	
	1340	MCC-MW-27B-042115	27B					12		X	X	X	X	X	X	X	X	
	1130	MCC-MW-101A-042115	101A					3		X								
	1342	MCC-MW-101B-042115	101B					3		X								
	1528	MCC-MW-79B-042115	79B					4		X	X							
4	1520	MCC-MW-27C-042115	27C					3		X								

	Y	N	Initials	Cooler Temp:
Custody Seals Present?			LMG	1 °C
(if present) Seals Intact?				Cooler #:
Received on Ice?	✓			
COC/Lbls Complete	✓			Therm ID: 291
Cont in Good Cond?	✓			
Correct Containers?	✓			Ship Carrier
Correct Samp Vol?	✓			FedEx UPS
Correct Preservation?	✓			DHL
Headspace/Volatiles?				

Tracking #:

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Walt Pryor	4-21-15	1655	1. RECEIVED BY	4/21/15	1654
2. RELINQUISHED BY	4/21/15		2. RECEIVED BY	4/21	1808
3. RELINQUISHED BY	4/21	2050	3. RECEIVED BY SES	4/21	2050

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

LMG 04122115 0407

4/02R FORM NO. TtNUS-001

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2066301 TMM020|MRC GW 2015

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2066301001	TB-042115	Water	4/21/2015 00:00	4/21/2015 20:50	Collected by Client
2066301002	MRC-MW-29A-042115	Water	4/21/2015 09:29	4/21/2015 20:50	Collected by Client
2066301003	MRC-MW-77B-042115	Water	4/21/2015 10:58	4/21/2015 20:50	Collected by Client
2066301004	MRC-MW-27A-042115	Water	4/21/2015 11:25	4/21/2015 20:50	Collected by Client
2066301005	MRC-MW-27B-042115	Water	4/21/2015 13:40	4/21/2015 20:50	Collected by Client
2066301006	MRC-MW-101A-042115	Water	4/21/2015 11:30	4/21/2015 20:50	Collected by Client
2066301007	MRC-MW-101B-042115	Water	4/21/2015 13:42	4/21/2015 20:50	Collected by Client
2066301008	MRC-MW-79B-042115	Water	4/21/2015 15:28	4/21/2015 20:50	Collected by Client
2066301009	MRC-MW-27C-042115	Water	4/21/2015 15:20	4/21/2015 20:50	Collected by Client

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2066301 TMM020|MRC GW 2015

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2066301001	2	TB-042115	SW846 8260C	cis-1,3-Dichloropropene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 77.3 and the control limits were 81 to 121.				
2066301001	3	TB-042115	SW846 8260C	o-Xylene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte o-Xylene. The % Recovery was reported as 77.1 and the control limits were 79 to 124.				
2066301004	5	MRC-MW-27A-042115	EPA 300.0	Nitrite-N
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
2066301004	6	MRC-MW-27A-042115	EPA 300.0	Nitrite-N
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
2066301004	7	MRC-MW-27A-042115	SW846 8260C	cis-1,3-Dichloropropene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 77.3 and the control limits were 81 to 121.				
2066301004	8	MRC-MW-27A-042115	SW846 8260C	o-Xylene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte o-Xylene. The % Recovery was reported as 77.1 and the control limits were 79 to 124.				
2066301005	1	MRC-MW-27B-042115	SW846 8260C	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 130 and the control limits were 71 to 122.				
2066301005	2	MRC-MW-27B-042115	S4500NH3D	Ammonia-nitrogen, Total
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
2066301006	2	MRC-MW-101A-042115	SW846 8260C	cis-1,3-Dichloropropene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 77.3 and the control limits were 81 to 121.				
2066301006	3	MRC-MW-101A-042115	SW846 8260C	o-Xylene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte o-Xylene. The % Recovery was reported as 77.1 and the control limits were 79 to 124.				
2066301008	1	MRC-MW-79B-042115	SW846 8260C	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 127 and the control limits were 71 to 122.				
2066301008	2	MRC-MW-79B-042115	SW846 8260C	cis-1,3-Dichloropropene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 76.3 and the control limits were 81 to 121.				
2066301009	2	MRC-MW-27C-042115	SW846 8260C	cis-1,3-Dichloropropene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 77.3 and the control limits were 81 to 121.				
2066301009	3	MRC-MW-27C-042115	SW846 8260C	o-Xylene
The QC sample type LCS for method SW846 8260C was outside the control limits for the analyte o-Xylene. The % Recovery was reported as 77.1 and the control limits were 79 to 124.				

Volatile Organics by 8260C Summary Forms

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168253

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042305.D Lab Sample ID: 2168253

Date Analyzed: 4/23/2015 Time Analyzed: 12:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168254(LCS)	2168254	15042306.D	12:51
MRC-MW-29A-042115	2066301002	15042327.D	18:53
MRC-MW-77B-042115	2066301003	15042328.D	19:10
MRC-MW-27B-042115	2066301005	15042329.D	19:28

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.62	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168253(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2168253

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042305.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		110	110	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.5	112	(73-117)
Bromodichloromethane	20.0		21.6	108	(79-126)
Bromoform	20.0		16.9	84.5	(70-123)
Bromomethane	20.0		27.2	136	(45-148)
2-Butanone	100		98.9	98.9	(50-152)
Carbon Disulfide	20.0		24.0	120	(57-131)
Carbon Tetrachloride	20.0		23.2	116	(62-132)
Chlorobenzene	20.0		21.5	108	(85-117)
Chlorodibromomethane	20.0		17.1	85.3	(77-122)
Chloroethane	20.0		21.9	109	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		20.8	104	(38-156)
Cyclohexane	20.0		22.4	112	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.4	92.2	(59-133)
1,2-Dibromoethane	20.0		20.2	101	(80-124)
1,2-Dichlorobenzene	20.0		21.2	106	(82-118)
1,3-Dichlorobenzene	20.0		22.3	112	(81-118)
1,4-Dichlorobenzene	20.0		21.1	106	(81-116)
Dichlorodifluoromethane	20.0		20.9	105	(17-166)
1,1-Dichloroethane	20.0		23.5	117	(78-124)
1,2-Dichloroethane	20.0		22.1	110	(70-133)
1,1-Dichloroethene	20.0		24.8	124	(63-128)
cis-1,2-Dichloroethene	20.0		22.9	115	(78-125)
trans-1,2-Dichloroethen	20.0		26.0	130*	(71-122)
1,2-Dichloropropane	20.0		22.3	111	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.5	(81-121)
trans-1,3-Dichloroprope	20.0		17.8	89.2	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2168254

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		475	95	(1-280)
Ethylbenzene	20.0		20.3	102	(80-124)
Freon 113	20.0		23.8	119	(50-130)
2-Hexanone	100		87.9	87.9	(65-154)
Isopropylbenzene	20.0		18.4	92.1	(73-129)
Methyl acetate	20.0		21.5	108	(70-130)
Methyl cyclohexane	20.0		22.5	112	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		94.8	94.8	(71-146)
Methylene Chloride	20.0		25.7	129*	(76-121)
Styrene	20.0		19.2	96	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.7	98.6	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.5	103	(80-125)
1,2,3-Trichlorobenzene	20.0		17.6	88.1	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		23.5	117	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.4	(82-126)
Trichloroethene	20.0		23.3	116	(77-124)
Trichlorofluoromethane	20.0		20.8	104	(38-123)
Vinyl Chloride	20.0		21.5	107	(27-138)
o-Xylene	20.0		16.9	84.4	(79-124)
mp-Xylene	40.0		39.6	98.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2168333

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042332.D Lab Sample ID: 2168333

Date Analyzed: 4/23/2015 Time Analyzed: 20:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2168334(LCS)	2168334	15042333.D	20:37
MRC-MW-79B-042115	2066301008	15042337.D	21:46

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168333(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2168333

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042332.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.63	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2168333(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2168333

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042332.D

Level (low/med): Date Received: 4/23/15

% Moisture: not dec. 100.0 Date Analyzed: 4/23/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2168334

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		106	106	(40-151)
Benzene	20.0		23.1	115	(80-124)
Bromochloromethane	20.0		22.6	113	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		16.8	84.1	(70-123)
Bromomethane	20.0		28.1	140	(45-148)
2-Butanone	100		102	102	(50-152)
Carbon Disulfide	20.0		22.5	113	(57-131)
Carbon Tetrachloride	20.0		23.0	115	(62-132)
Chlorobenzene	20.0		21.6	108	(85-117)
Chlorodibromomethane	20.0		16.8	83.9	(77-122)
Chloroethane	20.0		21.1	106	(51-142)
Chloroform	20.0		23.0	115	(78-122)
Chloromethane	20.0		20.9	104	(38-156)
Cyclohexane	20.0		21.7	108	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.6	87.8	(59-133)
1,2-Dibromoethane	20.0		20.0	99.8	(80-124)
1,2-Dichlorobenzene	20.0		20.4	102	(82-118)
1,3-Dichlorobenzene	20.0		21.5	107	(81-118)
1,4-Dichlorobenzene	20.0		20.4	102	(81-116)
Dichlorodifluoromethane	20.0		20.3	102	(17-166)
1,1-Dichloroethane	20.0		22.6	113	(78-124)
1,2-Dichloroethane	20.0		21.9	109	(70-133)
1,1-Dichloroethene	20.0		24.2	121	(63-128)
cis-1,2-Dichloroethene	20.0		22.2	111	(78-125)
trans-1,2-Dichloroethen	20.0		25.3	127*	(71-122)
1,2-Dichloropropane	20.0		22.1	110	(81-127)
cis-1,3-Dichloropropene	20.0		15.3	76.3*	(81-121)
trans-1,3-Dichloroprope	20.0		16.3	81.3	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2168334

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		478	95.6	(1-280)
Ethylbenzene	20.0		20.0	100	(80-124)
Freon 113	20.0		23.9	119	(50-130)
2-Hexanone	100		87.0	87	(65-154)
Isopropylbenzene	20.0		17.5	87.6	(73-129)
Methyl acetate	20.0		20.2	101	(70-130)
Methyl cyclohexane	20.0		21.4	107	(70-130)
Methyl t-Butyl Ether	20.0		20.2	101	(69-115)
4-Methyl-2-Pentanone(MI	100		93.8	93.8	(71-146)
Methylene Chloride	20.0		26.9	134*	(76-121)
Styrene	20.0		18.5	92.5	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	97.9	(74-135)
Tetrachloroethene	20.0		22.0	110	(72-124)
Toluene	20.0		19.9	99.7	(80-125)
1,2,3-Trichlorobenzene	20.0		17.0	84.8	(61-126)
1,2,4-Trichlorobenzene	20.0		15.9	79.5	(67-123)
1,1,1-Trichloroethane	20.0		23.0	115	(66-130)
1,1,2-Trichloroethane	20.0		20.1	100	(82-126)
Trichloroethene	20.0		23.2	116	(77-124)
Trichlorofluoromethane	20.0		20.6	103	(38-123)
Vinyl Chloride	20.0		21.2	106	(27-138)
o-Xylene	20.0		16.5	82.6	(79-124)
mp-Xylene	40.0		38.8	97	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2169479

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042705a.D Lab Sample ID: 2169479

Date Analyzed: 4/27/2015 Time Analyzed: 02:48

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2169480(LCS)	2169480	15042706a.D	03:05
TB-042115	2066301001	15042711.D	04:31
MRC-MW-101A-042115	2066301006	15042714.D	05:22
MRC-MW-27C-042115	2066301009	15042715.D	05:39
MRC-MW-27A-042115	2066301004	15042716.D	05:56
MRC-MW-79B-042115	2066301008	15042718.D	06:30
MRC-MW-27B-042115	2066301005	15042720.D	07:04

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2169479(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2169479

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042705a.D

Level (low/med): Date Received: 4/27/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2169479(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2169479

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042705a.D

Level (low/med): Date Received: 4/27/15

% Moisture: not dec. 100.0 Date Analyzed: 4/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2169480

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		108	108	(40-151)
Benzene	20.0		22.2	111	(80-124)
Bromochloromethane	20.0		22.0	110	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		16.7	83.4	(70-123)
Bromomethane	20.0		26.1	130	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		22.5	112	(57-131)
Carbon Tetrachloride	20.0		22.5	112	(62-132)
Chlorobenzene	20.0		20.1	100	(85-117)
Chlorodibromomethane	20.0		16.3	81.4	(77-122)
Chloroethane	20.0		19.1	95.4	(51-142)
Chloroform	20.0		22.0	110	(78-122)
Chloromethane	20.0		18.6	93	(38-156)
Cyclohexane	20.0		21.4	107	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.4	86.9	(59-133)
1,2-Dibromoethane	20.0		19.0	95.2	(80-124)
1,2-Dichlorobenzene	20.0		19.5	97.5	(82-118)
1,3-Dichlorobenzene	20.0		20.3	102	(81-118)
1,4-Dichlorobenzene	20.0		19.7	98.7	(81-116)
Dichlorodifluoromethane	20.0		18.6	92.9	(17-166)
1,1-Dichloroethane	20.0		21.7	108	(78-124)
1,2-Dichloroethane	20.0		21.5	108	(70-133)
1,1-Dichloroethene	20.0		23.4	117	(63-128)
cis-1,2-Dichloroethene	20.0		21.3	107	(78-125)
trans-1,2-Dichloroethen	20.0		23.5	117	(71-122)
1,2-Dichloropropane	20.0		21.4	107	(81-127)
cis-1,3-Dichloropropene	20.0		15.5	77.3*	(81-121)
trans-1,3-Dichloroprope	20.0		17.2	86.1	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2169480

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		467	93.5	(1-280)
Ethylbenzene	20.0		18.5	92.5	(80-124)
Freon 113	20.0		23.2	116	(50-130)
2-Hexanone	100		86.0	86	(65-154)
Isopropylbenzene	20.0		16.2	81.2	(73-129)
Methyl acetate	20.0		19.5	97.4	(70-130)
Methyl cyclohexane	20.0		20.9	104	(70-130)
Methyl t-Butyl Ether	20.0		19.9	99.6	(69-115)
4-Methyl-2-Pentanone(MI	100		91.6	91.6	(71-146)
Methylene Chloride	20.0		23.8	119	(76-121)
Styrene	20.0		17.1	85.3	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.7	93.4	(74-135)
Tetrachloroethene	20.0		20.6	103	(72-124)
Toluene	20.0		18.9	94.4	(80-125)
1,2,3-Trichlorobenzene	20.0		16.4	82.2	(61-126)
1,2,4-Trichlorobenzene	20.0		15.4	76.9	(67-123)
1,1,1-Trichloroethane	20.0		22.3	112	(66-130)
1,1,2-Trichloroethane	20.0		19.3	96.3	(82-126)
Trichloroethene	20.0		21.7	108	(77-124)
Trichlorofluoromethane	20.0		19.0	95.1	(38-123)
Vinyl Chloride	20.0		19.2	95.9	(27-138)
o-Xylene	20.0		15.4	77.1*	(79-124)
mp-Xylene	40.0		36.3	90.8	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170306

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042863.D Lab Sample ID: 2170306

Date Analyzed: 4/29/2015 Time Analyzed: 03:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170307(LCS)	2170307	15042864.D	03:22
MRC-MW-101B-042115	2066301007	15042870.D	05:05

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.52	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.38	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.27	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-020

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2165640(LCS)	92.9	82.4	90.5	88.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-020

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2168253(MB)	88.2	87.7	104	94.9	0
03	2168254(LCS)	85.0	84.1	95.4	87.1	0
04	MRC-MW-29A-042115	85.8	92.5	110	94.7	0
05	MRC-MW-77B-042115	86.6	87.7	107	95.5	0
06	MRC-MW-27B-042115	88.8	87.3	105	97.9	0
07	2168333(MB)	87.5	91.6	109	97.0	0
08	2168334(LCS)	84.1	87.2	98.8	88.7	0
09	MRC-MW-79B-042115	85.4	89.4	108	96.8	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-020

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
10	2169479(MB)	84.6	91.0	107	94.7	0
11	2169480(LCS)	82.2	86.0	97.9	86.2	0
12	TB-042115	89.1	92.5	113	95.1	0
13	MRC-MW-101A-042115	85.7	93.1	110	96.4	0
14	MRC-MW-27C-042115	85.7	92.8	110	92.9	0
15	MRC-MW-27A-042115	87.8	91.5	108	95.4	0
16	MRC-MW-79B-042115	85.8	96.1	113	95.9	0
17	MRC-MW-27B-042115	87.0	92.7	108	94.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract:

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-020

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
18	2170306(MB)	97.6	98.9	102	101	0
19	2170307(LCS)	96.5	94.4	94.2	91.3	0
20	MRC-MW-101B-042115	99.2	107	112	102	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15041700.D BFB Injection Date: 4/17/2015

Instrument ID: ms15.i BFB Injection Time: 09:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.6
75	30.0 - 60.0% of mass 95	49.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.3
175	5.0 - 9.0% of mass 174	5.7 (7.0) 1
176	95.0 - 101.0% of mass 174	77.6 (95.4) 1
177	5.0 - 9.0% of mass 176	5.0 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15041703.D	4/17/2015	10:39
1234	1234	15041704.D	4/17/2015	10:56
1235	1235	15041705.D	4/17/2015	11:13
1236	1236	15041706.D	4/17/2015	11:31
1237	1237	15041707.D	4/17/2015	11:48
1238	1238	15041708.D	4/17/2015	12:05
1239	1239	15041709.D	4/17/2015	12:23
2165640(LCS)	2165640	15041714.D	4/17/2015	13:49

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02150			A		0.025420		13.35269
Acrolein	0.04346	0.04700		A		0.046870		8.87083
Acrylonitrile	0.09374	0.09420		A		0.101720		10.11420
Acetonitrile	0.02968			A		0.036650		13.39134
tert-Amyl Ethylether	4213141	4951		L	0.000000	1.627200		0.99780
tert-Amyl methyl ether	5133616	5851		L	0.000000	1.323550		0.99917
tert-Amyl Alcohol	601293	704		L	0.000000	56.396912		0.99814
Benzene	1.27434	1.10894		A		1.241190		10.58614
Benzyl Chloride				Q	0.000000	0.143690	0.029740	0.99991
Bromobenzene	0.97604	0.74747		A		0.902000		14.84422
Bromochloromethane	0.15243	0.14604		A		0.163350		10.25949
Bromodichloromethane	0.44080	0.33394		A		0.392350		13.81932
Bromoform *	1338355	1232		Q	0.000000	0.435990	0.009530	0.99971
Bromomethane	1075271			L	0.000000	6.218590		0.99848
2-Butanone	0.03713			A		0.037740		12.55237
tert.- Butyl Alcohol	0.02376			A		0.024770		7.01068
tert-Butylbenzene	2073194	1739		L	0.000000	1.297790		0.99982
n-Butylbenzene	2204415			L	0.000000	1.224140		0.99935
sec-Butylbenzene	10720671	7378		L	0.000000	0.250660		0.99977
Carbon Disulfide	0.75980	0.60853		A		0.664000		10.57539
Carbon Tetrachloride	0.40632	0.28418		A		0.362980		13.42907
Chloroacetonitrile	325006			Q	0.000000	0.022800	-0.000010	0.99965
Chlorobenzene *	2.19164	1.87636		A		2.138210		9.16523
1-Chlorobutane	0.30442	0.27544		A		0.301730		10.02872
Chlorodibromomethane	2229887	2646		L	0.000000	1.320690		0.99897
Chloroethane	0.20128			A		0.238640		11.97155
2-Chloroethylvinyl ether	0.14061			A		0.128220		10.02306
Chloroform **	3904606	18104		Q	0.030370	0.575280	0.000060	0.99967
1-Chlorohexane	2878567	2684		L	0.000000	1.022160		0.99867
Chloromethane *	0.42875			A		0.515330		14.85648
Chloroprene	0.41952	0.36738		A		0.407690		10.34581
3-Chloro-1-propene	0.29246	0.30678		A		0.314290		6.84089
o-Chlorotoluene	8134248	7088		L	0.000000	0.331320		0.99982
p-Chlorotoluene	7603192	5801		L	0.000000	0.354900		0.99977
Cyclohexane	2984728	4171		L	0.000000	2.262420		0.99982
1,2-Dibromo-3-Chloropropane	0.14266	0.09901		A		0.128270		11.53273

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.65129	0.54870		A		0.613510		11.23085
Dibromomethane	0.19172	0.18388		A		0.192910		6.75287
trans-1,4-Dichloro-2-butene	635655	649		L	0.000000	4.160080		0.99863
1,2-Dichlorobenzene	1.78231	1.55402		A		1.690540		9.20938
1,3-Dichlorobenzene	1.82595	1.40511		A		1.714790		12.13976
1,4-Dichlorobenzene	1.85978	1.89440		A		1.869510		5.23051
Dichlorodifluoromethane	0.39025			A		0.440580		10.81630
1,1-Dichloroethane *		0.53864		A		0.565720		7.47475
1,2-Dichloroethene, Total	5300341	9644		L	0.000000	2.545260		0.99960
1,2-Dichloroethane	0.40364	0.41141		A		0.430720		8.19580
1,1-Dichloroethene **	0.38202	0.39648		A		0.398900		6.23044
cis-1,2-Dichloroethene	0.41233	0.36831		A		0.404200		8.14800
trans-1,2-Dichloroethene	0.37614	0.37806		A		0.388220		7.20134
Dichlorofluoromethane	0.54189	0.61008		A		0.574180		8.04570
1,1-Dichloro-2-Propanone	207685			L	0.000000	69.396950		0.99911
2,2-Dichloropropane	0.36550	0.30570		A		0.332710		9.13718
1,3-Dichloropropane	1.20820	0.99315		A		1.169770		9.65596
1,2-Dichloropropane **	0.33277	0.29602		A		0.317840		9.42977
1,1-Dichloropropene	0.40589	0.33603		A		0.378320		11.86754
cis-1,3-Dichloropropene	3487668	3447		L	0.000000	0.846900		0.99846
trans-1,3-Dichloropropene	3142276	2943		L	0.000000	0.933700		0.99934
1,3-Dichloropropene, Total	6629944	6390		L	0.000000	0.888180		0.99894
Diisobutylene	4686812	32902		L	0.000000	1.435930		0.99976
Diisopropyl ether	0.83077	0.79937		A		0.844300		8.28498
1,4-Dioxane	0.00340			A		0.003300		12.26198
Ethyl Acetate	0.25207	0.25137		A		0.254670		8.19100
Ethyl ether	0.18507	0.19464		A		0.190110		7.07916
Ethyl Methacrylate	2846887	2359		L	0.000000	1.026370		0.99940
Ethyl tert-butyl ether	5580280	7541		L	0.000000	1.203310		0.99983
Ethylbenzene **	3394435	3836		L	0.000000	0.861550		0.99977
Freon 113	0.25000	0.32164		A		0.273740		9.74960
Heptane	1405405	1707		L	0.000000	4.824340		0.99835
Hexachlorobutadiene	0.47840	0.42810		A		0.431370		10.14694
Hexachloroethane	1598514	1616		L	0.000000	1.713730		0.99725
Hexane	0.47877	0.53586		A		0.483430		5.95882
2-Hexanone	6265115	6303		L	0.000000	2.275700		0.99798

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	627151	525		Q	0.000000	0.042990	0.007580	0.99944
Isobutyl alcohol	955874	1331		L	0.000000	69.820503		0.99892
Isopropyl Alcohol	0.01537			A		0.016710		7.51774
Isopropylbenzene	10412583	7991		L	0.000000	0.259880		0.99943
p-Isopropyltoluene	2443168	1600		L	0.000000	1.104060		0.99950
Methyl acetate	0.04770	0.06725		A		0.054460		13.00454
Methyl acrylate	1702184	2441		L	0.000000	3.922780		0.99952
Methacrylonitrile	833267	1297		L	0.000000	7.977050		0.99871
Methyl cyclohexane	1.13783	0.93544		A		1.003650		12.78874
Methyl methacrylate	1576163	1795		L	0.000000	4.286010		0.99945
Methyl t-Butyl Ether	0.74180	0.84039		A		0.771460		6.21220
4-Methyl-2-Pentanone(MIBK)	8723255	8746		L	0.000000	1.629160		0.99728
Methylene Chloride	2057544	12619		Q	0.025770	0.292250	0.001430	0.99959
Naphthalene	6500256	3979		Q	-0.179080	2.438210	0.002710	0.99903
Nitrobenzene	1371666	868		Q	-0.023150	0.028480	0.000350	0.99841
2-Nitropropane		2401		L	0.000000	6.419340		0.99861
Octane	1199717	1080		L	0.000000	2.445360		0.99769
Pentachloroethane	0.70092	0.63768		A		0.647790		8.81707
Pentane	0.15978			A		0.168150		7.69955
n-Propanol	0.01807			A		0.021910		12.47129
Propionitrile	0.03992	0.03818		A		0.041240		9.96807
n-Propylbenzene	2889465	1946		L	0.000000	0.933490		0.99977
Styrene	6953620	5094		L	0.000000	0.388850		0.99958
1,1,1,2-Tetrachloroethane	0.76991	0.52147		A		0.692060		14.52981
1,1,2,2-Tetrachloroethane *	0.88410	0.99907		A		0.973190		7.38276
Tetrachloroethene	0.65079	0.62125		A		0.671980		6.11843
Tetrahydrofuran	0.07590			A		0.075540		14.55417
Toluene **	5525329	6148		L	0.000000	0.528490		0.99981
Total Xylenes	12433730	11638		L	0.000000	0.707990		0.99948
1,2,3-Trichlorobenzene	2641056	2405		L	0.000000	1.015400		0.99972
1,2,4-Trichlorobenzene	3167370	2835		Q	0.000000	1.111710	0.010630	0.99972
1,1,1-Trichloroethane	0.46988	0.37573		A		0.439570		11.46110
1,1,2-Trichloroethane	0.56098	0.57675		A		0.593560		6.56888
Trichloroethene	0.32795	0.31080		A		0.331050		6.53281
Trichlorofluoromethane	0.50933			A		0.562280		9.26814
1,2,3-Trichloropropane	0.27987	0.31096		A		0.312020		8.11955

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15041704.D RRF005 = 15041705.D RRF020 = 15041706.D RRF050 = 15041707.D

RRF100 = 15041708.D RRF200 = 15041709.D RRF00.5 = 15041703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8816753	4948		L	0.000000	0.305930		0.99972
1,3,5-Trimethylbenzene	8637632	5644		L	0.000000	0.312070		0.99981
Vinyl Acetate	431185	521		L	0.000000	15.534290		0.99979
Vinyl Chloride **	0.36981			A		0.390360		7.18993
o-Xylene	4059055	3537		L	0.000000	0.725160		0.99896
mp-Xylene	8374675	8101		L	0.000000	0.699710		0.99963
4-Bromofluorobenzene		4420		L	0.000000	1.162640		0.99966
Dibromofluoromethane				A		0.336800		13.41450
1,2-Dichloroethane-d4	2270423			L	0.000000	2.961950		0.99888
Toluene-d8				A		2.577610		9.74042

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042300.D BFB Injection Date: 4/23/2015

Instrument ID: ms15.i BFB Injection Time: 09:51

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.3
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	77.8
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	74.8 (96.1) 1
177	5.0 - 9.0% of mass 176	4.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042302.D	4/23/2015	11:17
2168253(MB)	2168253	15042305.D	4/23/2015	12:33
2168254(LCS)	2168254	15042306.D	4/23/2015	12:51
MRC-MW-29A-042115	2066301002	15042327.D	4/23/2015	18:53
MRC-MW-77B-042115	2066301003	15042328.D	4/23/2015	19:10
MRC-MW-27B-042115	2066301005	15042329.D	4/23/2015	19:28
2168333(MB)	2168333	15042332.D	4/23/2015	20:19
2168334(LCS)	2168334	15042333.D	4/23/2015	20:37
MRC-MW-79B-042115	2066301008	15042337.D	4/23/2015	21:46

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0239			-6.1	100.0	A
Acrolein	0.0469	0.0480			2.4	100.0	A
Acrylonitrile	0.1017	0.1029			1.2	100.0	A
Acetonitrile	0.0366	0.0330			-9.9	100.0	A
tert-Amyl Ethylether	50.0000		49.6704		-0.7	100.0	L
tert-Amyl methyl ether	50.0000		48.6696		-2.7	100.0	L
tert-Amyl Alcohol	250		192		-23.2	100.0	L
Benzene	1.2412	1.4017			12.9	100.0	A
Benzyl Chloride	50.0000		53.7271		7.5	100.0	Q
Bromobenzene	0.9020	1.0364			14.9	100.0	A
Bromochloromethane	0.1634	0.1771			8.4	100.0	A
Bromodichloromethane	0.3923	0.4460			13.7	100.0	A
Bromoform	50.0000		46.2155	0.100	-7.6	100.0	Q
Bromomethane	50.0000		66.9949		34.0	100.0	L
2-Butanone	0.0377	0.0315			-16.7	100.0	A
tert.- Butyl Alcohol	0.0248	0.0228			-8.1	100.0	A
tert-Butylbenzene	50.0000		53.4198		6.8	100.0	L
n-Butylbenzene	50.0000		54.1976		8.4	100.0	L
sec-Butylbenzene	50.0000		54.1201		8.2	100.0	L
Carbon Disulfide	0.6640	0.8077			21.6	100.0	A
Carbon Tetrachloride	0.3630	0.4237			16.7	100.0	A
Chloroacetonitrile	250		227		-9.1	100.0	Q
Chlorobenzene	2.1382	2.3641		0.300	10.6	100.0	A
1-Chlorobutane	0.3017	0.3414			13.2	100.0	A
Chlorodibromomethane	50.0000		46.6616		-6.7	100.0	L
Chloroethane	0.2386	0.2777			16.4	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0769			-40.1	100.0	A
Chloroform	50.0000		55.2796		10.6	20.0	Q
1-Chlorohexane	50.0000		51.9047		3.8	100.0	L
Chloromethane	0.5153	0.5281		0.100	2.5	100.0	A
Chloroprene	0.4077	0.4777			17.2	100.0	A
3-Chloro-1-propene	0.3143	0.4022			28.0	100.0	A
o-Chlorotoluene	50.0000		53.3696		6.7	100.0	L
p-Chlorotoluene	50.0000		53.7630		7.5	100.0	L
Cyclohexane	50.0000		53.8627		7.7	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1216			-5.2	100.0	A
1,2-Dibromoethane	0.6135	0.6351			3.5	100.0	A
Dibromomethane	0.1929	0.2000			3.7	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		48.1595		-3.7	100.0	L
1,2-Dichlorobenzene	1.6905	1.8718			10.7	100.0	A
1,3-Dichlorobenzene	1.7148	2.0030			16.8	100.0	A
1,4-Dichlorobenzene	1.8695	2.0376			9.0	100.0	A
Dichlorodifluoromethane	0.4406	0.5551			26.0	100.0	A
1,1-Dichloroethane	0.5657	0.6239		0.100	10.3	100.0	A
1,2-Dichloroethene, Total	100		114		13.8	100.0	L
1,2-Dichloroethane	0.4307	0.4435			3.0	100.0	A
1,1-Dichloroethene	0.3989	0.4351			9.1	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4510			11.6	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4502			16.0	100.0	A
Dichlorofluoromethane	0.5742	0.6201			8.0	100.0	A
1,1-Dichloro-2-Propanone	250		214		-14.4	100.0	L
2,2-Dichloropropane	0.3327	0.4180			25.6	100.0	A
1,3-Dichloropropane	1.1698	1.2213			4.4	100.0	A
1,2-Dichloropropane	0.3178	0.3513			10.5	20.0	A
1,1-Dichloropropene	0.3783	0.4353			15.1	100.0	A
cis-1,3-Dichloropropene	50.0000		49.5108		-1.0	100.0	L
trans-1,3-Dichloropropene	50.0000		49.4206		-1.2	100.0	L
1,3-Dichloropropene, Total	100		98.9314		-1.1	100.0	L
Diisobutylene	50.0000		56.5816		13.2	100.0	L
Diisopropyl ether	0.8443	0.9826			16.4	100.0	A
1,4-Dioxane	0.0033	0.0033			-1.3	100.0	A
Ethyl Acetate	0.2547	0.2417			-5.1	100.0	A
Ethyl ether	0.1901	0.1998			5.1	100.0	A
Ethyl Methacrylate	50.0000		44.9097		-10.2	100.0	L
Ethyl tert-butyl ether	50.0000		52.4469		4.9	100.0	L
Ethylbenzene	50.0000		53.5247		7.0	20.0	L
Freon 113	0.2737	0.2931			7.1	100.0	A
Heptane	50.0000		59.9886		20.0	100.0	L
Hexachlorobutadiene	0.4314	0.5619			30.2	100.0	A
Hexachloroethane	50.0000		48.7170		-2.6	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.5697			17.8	100.0	A
2-Hexanone	250		231		-7.4	100.0	L
Iodomethane	50.0000		77.3056		54.6	100.0	Q
Isobutyl alcohol	500		535		7.1	100.0	L
Isopropyl Alcohol	0.0167	0.0153			-8.8	100.0	A
Isopropylbenzene	50.0000		51.8856		3.8	100.0	L
p-Isopropyltoluene	50.0000		53.4014		6.8	100.0	L
Methyl acetate	0.0545	0.0493			-9.4	100.0	A
Methyl acrylate	50.0000		46.8987		-6.2	100.0	L
Methacrylonitrile	50.0000		49.4612		-1.1	100.0	L
Methyl cyclohexane	1.0036	1.2165			21.2	100.0	A
Methyl methacrylate	50.0000		44.9346		-10.1	100.0	L
Methyl t-Butyl Ether	0.7715	0.7911			2.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		242		-3.1	100.0	L
Methylene Chloride	50.0000		59.9564		19.9	100.0	Q
Naphthalene	50.0000		45.7422		-8.5	100.0	Q
Nitrobenzene	500		426		-14.8	100.0	Q
2-Nitropropane	250		222		-11.1	100.0	L
Octane	50.0000		69.6782		39.4	100.0	L
Pentachloroethane	0.6478	0.7077			9.2	100.0	A
Pentane	0.1681	0.1955			16.3	100.0	A
n-Propanol	0.0219	0.0217			-1.1	100.0	A
Propionitrile	0.0412	0.0384			-7.0	100.0	A
n-Propylbenzene	50.0000		53.7839		7.6	100.0	L
Styrene	50.0000		52.3186		4.6	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7776			12.4	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.9022		0.300	-7.3	100.0	A
Tetrachloroethene	0.6720	0.7333			9.1	100.0	A
Tetrahydrofuran	0.0755	0.0715			-5.4	100.0	A
Toluene	50.0000		53.7037		7.4	20.0	L
Total Xylenes	150		157		4.7	100.0	L
1,2,3-Trichlorobenzene	50.0000		50.4410		0.9	100.0	L
1,2,4-Trichlorobenzene	50.0000		51.2571		2.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.5003			13.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5872			-1.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/23/2015 11:17

Lab File ID: 15042302.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3685			11.3	100.0	A
Trichlorofluoromethane	0.5623	0.6239			11.0	100.0	A
1,2,3-Trichloropropane	0.3120	0.2846			-8.8	100.0	A
1,2,4-Trimethylbenzene	50.0000		53.0436		6.1	100.0	L
1,3,5-Trimethylbenzene	50.0000		54.0407		8.1	100.0	L
Vinyl Acetate	50.0000		51.8072		3.6	100.0	L
Vinyl Chloride	0.3904	0.4539			16.3	20.0	A
o-Xylene	50.0000		50.8720		1.7	100.0	L
mp-Xylene	100		106		6.3	100.0	L
4-Bromofluorobenzene	50.0000		44.4466		-11.1	100.0	L
Dibromofluoromethane	0.3368	0.2774			-17.6	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8549		-10.3	100.0	L
Toluene-d8	2.5776	2.3218			-9.9	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042700.D BFB Injection Date: 4/27/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.9
75	30.0 - 60.0% of mass 95	48.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	88.1
175	5.0 - 9.0% of mass 174	6.2 (7.1) 1
176	95.0 - 101.0% of mass 174	84.2 (95.5) 1
177	5.0 - 9.0% of mass 176	5.6 (6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15042702.D	4/27/2015	01:46
2169479(MB)	2169479	15042705a.D	4/27/2015	02:48
2169480(LCS)	2169480	15042706a.D	4/27/2015	03:05
TB-042115	2066301001	15042711.D	4/27/2015	04:31
MRC-MW-101A-042115	2066301006	15042714.D	4/27/2015	05:22
MRC-MW-27C-042115	2066301009	15042715.D	4/27/2015	05:39
MRC-MW-27A-042115	2066301004	15042716.D	4/27/2015	05:56
MRC-MW-79B-042115	2066301008	15042718.D	4/27/2015	06:30
MRC-MW-27B-042115	2066301005	15042720.D	4/27/2015	07:04

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0254	0.0250			-1.8	100.0	A
Acrolein	0.0469	0.0479			2.2	100.0	A
Acrylonitrile	0.1017	0.1016			-0.1	100.0	A
Acetonitrile	0.0366	0.0332			-9.3	100.0	A
tert-Amyl Ethylether	50.0000		47.6335		-4.7	100.0	L
tert-Amyl methyl ether	50.0000		49.1583		-1.7	100.0	L
tert-Amyl Alcohol	250		220		-12.0	100.0	L
Benzene	1.2412	1.3652			10.0	100.0	A
Benzyl Chloride	50.0000		50.3552		0.7	100.0	Q
Bromobenzene	0.9020	0.9557			6.0	100.0	A
Bromochloromethane	0.1634	0.1761			7.8	100.0	A
Bromodichloromethane	0.3923	0.4432			13.0	100.0	A
Bromoform	50.0000		46.9534	0.100	-6.1	100.0	Q
Bromomethane	50.0000		60.1045		20.2	100.0	L
2-Butanone	0.0377	0.0345			-8.5	100.0	A
tert.- Butyl Alcohol	0.0248	0.0237			-4.1	100.0	A
tert-Butylbenzene	50.0000		48.2497		-3.5	100.0	L
n-Butylbenzene	50.0000		47.6151		-4.8	100.0	L
sec-Butylbenzene	50.0000		48.4858		-3.0	100.0	L
Carbon Disulfide	0.6640	0.7166			7.9	100.0	A
Carbon Tetrachloride	0.3630	0.4185			15.3	100.0	A
Chloroacetonitrile	250		231		-7.7	100.0	Q
Chlorobenzene	2.1382	2.2215		0.300	3.9	100.0	A
1-Chlorobutane	0.3017	0.3411			13.0	100.0	A
Chlorodibromomethane	50.0000		46.1025		-7.8	100.0	L
Chloroethane	0.2386	0.2369			-0.7	100.0	A
2-Chloroethylvinyl ether	0.1282	0.0474			-63.0	100.0	A
Chloroform	50.0000		53.9878		8.0	20.0	Q
1-Chlorohexane	50.0000		46.5437		-6.9	100.0	L
Chloromethane	0.5153	0.4429		0.100	-14.1	100.0	A
Chloroprene	0.4077	0.4553			11.7	100.0	A
3-Chloro-1-propene	0.3143	0.3546			12.8	100.0	A
o-Chlorotoluene	50.0000		48.5916		-2.8	100.0	L
p-Chlorotoluene	50.0000		48.3545		-3.3	100.0	L
Cyclohexane	50.0000		50.5206		1.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1283	0.1230			-4.1	100.0	A
1,2-Dibromoethane	0.6135	0.6181			0.7	100.0	A
Dibromomethane	0.1929	0.1996			3.5	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		47.2602		-5.5	100.0	L
1,2-Dichlorobenzene	1.6905	1.7199			1.7	100.0	A
1,3-Dichlorobenzene	1.7148	1.8056			5.3	100.0	A
1,4-Dichlorobenzene	1.8695	1.8580			-0.6	100.0	A
Dichlorodifluoromethane	0.4406	0.4611			4.7	100.0	A
1,1-Dichloroethane	0.5657	0.5972		0.100	5.6	100.0	A
1,2-Dichloroethene, Total	100		106		6.3	100.0	L
1,2-Dichloroethane	0.4307	0.4434			2.9	100.0	A
1,1-Dichloroethene	0.3989	0.4044			1.4	20.0	A
cis-1,2-Dichloroethene	0.4042	0.4293			6.2	100.0	A
trans-1,2-Dichloroethene	0.3882	0.4131			6.4	100.0	A
Dichlorofluoromethane	0.5742	0.5888			2.5	100.0	A
1,1-Dichloro-2-Propanone	250		242		-3.2	100.0	L
2,2-Dichloropropane	0.3327	0.3868			16.3	100.0	A
1,3-Dichloropropane	1.1698	1.1635			-0.5	100.0	A
1,2-Dichloropropane	0.3178	0.3415			7.4	20.0	A
1,1-Dichloropropene	0.3783	0.4184			10.6	100.0	A
cis-1,3-Dichloropropene	50.0000		46.0652		-7.9	100.0	L
trans-1,3-Dichloropropene	50.0000		47.1187		-5.8	100.0	L
1,3-Dichloropropene, Total	100		93.1838		-6.8	100.0	L
Diisobutylene	50.0000		51.1501		2.3	100.0	L
Diisopropyl ether	0.8443	0.9264			9.7	100.0	A
1,4-Dioxane	0.0033	0.0034			2.8	100.0	A
Ethyl Acetate	0.2547	0.2516			-1.2	100.0	A
Ethyl ether	0.1901	0.1937			1.9	100.0	A
Ethyl Methacrylate	50.0000		43.3676		-13.3	100.0	L
Ethyl tert-butyl ether	50.0000		51.3371		2.7	100.0	L
Ethylbenzene	50.0000		49.8929		-0.2	20.0	L
Freon 113	0.2737	0.2623			-4.2	100.0	A
Heptane	50.0000		47.5869		-4.8	100.0	L
Hexachlorobutadiene	0.4314	0.4350			0.8	100.0	A
Hexachloroethane	50.0000		46.0014		-8.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.4834	0.4900			1.3	100.0	A
2-Hexanone	250		238		-4.7	100.0	L
Iodomethane	50.0000		67.9538		35.9	100.0	Q
Isobutyl alcohol	500		454		-9.2	100.0	L
Isopropyl Alcohol	0.0167	0.0160			-4.3	100.0	A
Isopropylbenzene	50.0000		47.0676		-5.9	100.0	L
p-Isopropyltoluene	50.0000		47.5179		-5.0	100.0	L
Methyl acetate	0.0545	0.0502			-7.9	100.0	A
Methyl acrylate	50.0000		49.1232		-1.8	100.0	L
Methacrylonitrile	50.0000		52.8009		5.6	100.0	L
Methyl cyclohexane	1.0036	1.0852			8.1	100.0	A
Methyl methacrylate	50.0000		45.8976		-8.2	100.0	L
Methyl t-Butyl Ether	0.7715	0.7682			-0.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		249		-0.5	100.0	L
Methylene Chloride	50.0000		55.1025		10.2	100.0	Q
Naphthalene	50.0000		45.0891		-9.8	100.0	Q
Nitrobenzene	500		450		-10.0	100.0	Q
2-Nitropropane	250		232		-7.1	100.0	L
Octane	50.0000		45.1359		-9.7	100.0	L
Pentachloroethane	0.6478	0.6583			1.6	100.0	A
Pentane	0.1681	0.1594			-5.2	100.0	A
n-Propanol	0.0219	0.0226			3.1	100.0	A
Propionitrile	0.0412	0.0415			0.7	100.0	A
n-Propylbenzene	50.0000		48.9680		-2.1	100.0	L
Styrene	50.0000		47.6014		-4.8	100.0	L
1,1,1,2-Tetrachloroethane	0.6921	0.7521			8.7	100.0	A
1,1,2,2-Tetrachloroethane	0.9732	0.8910		0.300	-8.4	100.0	A
Tetrachloroethene	0.6720	0.6889			2.5	100.0	A
Tetrahydrofuran	0.0755	0.0776			2.8	100.0	A
Toluene	50.0000		49.9432		-0.1	20.0	L
Total Xylenes	150		145		-3.2	100.0	L
1,2,3-Trichlorobenzene	50.0000		48.3088		-3.4	100.0	L
1,2,4-Trichlorobenzene	50.0000		46.2476		-7.5	100.0	Q
1,1,1-Trichloroethane	0.4396	0.4913			11.8	100.0	A
1,1,2-Trichloroethane	0.5936	0.5779			-2.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date/Time: 4/27/2015 01:46

Lab File ID: 15042702.D Init. Calib. Date(s): 4/17/2015 4/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:39 12:23

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3311	0.3491			5.5	100.0	A
Trichlorofluoromethane	0.5623	0.5387			-4.2	100.0	A
1,2,3-Trichloropropane	0.3120	0.2789			-10.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		48.3422		-3.3	100.0	L
1,3,5-Trimethylbenzene	50.0000		49.0251		-1.9	100.0	L
Vinyl Acetate	50.0000		51.3609		2.7	100.0	L
Vinyl Chloride	0.3904	0.3748			-4.0	20.0	A
o-Xylene	50.0000		46.2749		-7.5	100.0	L
mp-Xylene	100		98.8916		-1.1	100.0	L
4-Bromofluorobenzene	50.0000		41.0901		-17.8	100.0	L
Dibromofluoromethane	0.3368	0.2745			-18.5	100.0	A
1,2-Dichloroethane-d4	50.0000		44.8746		-10.3	100.0	L
Toluene-d8	2.5776	2.1876			-15.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-020

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170306(MB)	2170306	15042863.D	4/29/2015	03:05
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22
MRC-MW-101B-042115	2066301007	15042870.D	4/29/2015	05:05

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281			A		0.058130		8.00928
Acrylonitrile	0.10516			A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569			Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603			Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756			Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409			A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899			A		0.960870		2.84433
Bromochloromethane	1006470			Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902			A		0.439940		5.20183
Bromoform *	1346656			Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375			Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963			Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232			Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649			A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058			A		2.387700		9.81289
1-Chlorobutane	2004831			Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932			Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843			Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981			Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985			A		0.487620		8.20179
3-Chloro-1-propene	1986844			Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524			Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920			Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067			A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492			Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592			A		0.656240		6.68999
Dibromomethane	0.20007			A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849			A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836			A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377			A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952			A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *				Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738			Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256			Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130			Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147			A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967			Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477			Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613			A		0.393030		11.00113
1,3-Dichloropropane	3397315			Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163			A		0.353020		7.18867
1,1-Dichloropropene	0.44411			A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211			Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011			Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222			Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772			Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524			Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338			A		0.267450		8.79804
Ethyl ether	1277641			Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230			Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688			A		0.834360		7.56518
Ethylbenzene **	3284693			Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760			Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079			Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419			Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937			Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972			Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772			Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521			Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145			Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456			Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785			Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421			Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309			A		0.252940		7.42840
Methacrylonitrile	842261			Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546			A		1.101960		5.48263
Methyl methacrylate	1605255			Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990			A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944			Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507			Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758			Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688			Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane				Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146			Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284			A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216			A		0.043560		2.37666
n-Propylbenzene	2771637			Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147			Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918			A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297			Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301			Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051			Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957			Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254			Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929			Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704			A		0.515600		7.96741
1,1,2-Trichloroethane	1627786			Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775			Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603			Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-020

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613			Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627			Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658			Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939			Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018			Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene				Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Lab File ID: 15041707.D Date Analyzed: 4/17/2015

Instrument ID: ms15.i Time Analyzed: 11:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	393536	5.913	362552	7.686	921216	3.910
UPPER LIMIT	787072	6.413	725104	8.186	1842432	4.410
LOWER LIMIT	196768	5.413	181276	7.186	460608	3.410
SAMPLE NO.						
2165640(LCS)	389068	5.912	362447	7.686	881867	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Lab File ID: 15042302.D Date Analyzed: 4/23/2015

Instrument ID: ms15.i Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	390234	5.912	359420	7.680	891295	3.910
UPPER LIMIT	780468	6.412	718840	8.180	1782590	4.410
LOWER LIMIT	195117	5.412	179710	7.180	445648	3.410
SAMPLE NO.						
1800	390234	5.912	359420	7.680	891295	3.910
2168253(MB)	297853	5.913	231105	7.686	726287	3.910
2168254(LCS)	365551	5.913	329106	7.686	807783	3.910
MRC-MW-29A-042115	266317	5.913	210873	7.686	675212	3.910
MRC-MW-77B-042115	277705	5.913	228869	7.686	715005	3.910
MRC-MW-27B-042115	280084	5.912	226634	7.686	725348	3.910
2168333(MB)	263998	5.913	206796	7.686	682839	3.910
2168334(LCS)	359550	5.912	329270	7.686	784148	3.910
MRC-MW-79B-042115	262696	5.913	209476	7.686	684616	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Lab File ID: 15042702.D Date Analyzed: 4/27/2015

Instrument ID: ms15.i Time Analyzed: 01:46

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	409666	5.913	383464	7.686	907170	3.910
UPPER LIMIT	819332	6.413	766928	8.186	1814340	4.410
LOWER LIMIT	204833	5.413	191732	7.186	453585	3.410
SAMPLE NO.						
1800	409666	5.913	383464	7.686	907170	3.910
2169479(MB)	286855	5.913	232764	7.686	728075	3.910
2169480(LCS)	379979	5.913	350611	7.686	815835	3.910
TB-042115	267435	5.912	209545	7.686	683687	3.910
MRC-MW-101A-04211	258486	5.912	205583	7.686	667484	3.910
MRC-MW-27C-042115	261134	5.913	206861	7.686	667103	3.910
MRC-MW-27A-042115	267463	5.913	210726	7.686	683836	3.910
MRC-MW-79B-042115	252658	5.912	195671	7.686	626881	3.910
MRC-MW-27B-042115	269185	5.913	211288	7.686	681184	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-020

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170306(MB)	281749	5.912	230024	7.686	712696	3.910
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910
MRC-MW-101B-04211	243661	5.912	193412	7.686	608089	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Light Hydrocarbon Gases by Method RSK-175 Summary Forms

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2169990

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Lab File ID: MDSA003 Lab Sample ID: 2169990

Date Analyzed: 04/28/15 Time Analyzed: 0731

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-27A-0	2066301004	MDSA005	0804
02	MRC-MW-27B-0	2066301005	MDSA006	0829
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
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30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2169990

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Matrix: (soil/water) WATER Lab Sample ID: 2169990

Sample wt/vol: _____ (g/mL) ML Lab File ID: MDSA003

Level: (low/med) LOW Date Received: 04/28/15

% Moisture: not dec. _____ Date Analyzed: 04/28/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM I VOA

ALS Environmental Services

TARGET COMPOUNDS

Client Name:
Lab Smp Id: 2169990
Sample Location:
Sample Date: 00:00:00
Sample Matrix: WATER
Analysis Type: VOA
Data Type: GC MULTI COMP
Misc Info: ZZ SVGC 37819 RSK175W

Client SDG: 03030212
Client Smp ID: MB for HBN 69756 [S
Sample Point:
Date Received: 28-APR-2015
Quant Type: ESTD
Level: LOW
Operator: JSH

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/KG) ug/L	Q
74-82-8	METHANE	1.29948	J

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
10						
11						
12						
13						
14						
15						
16						
17						
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32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	04/28/15	0642		
02	LEVEL5	LEVEL5	04/28/15	0657		
03	2169990	2169990	04/28/15	0731		
04	MRC-MW-27A-0	2066301004	04/28/15	0804		
05	MRC-MW-27B-0	2066301005	04/28/15	0829		
06	LEVEL5	LEVEL5	04/28/15	1143		
07						
08						
09						
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32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 0642

Lab File ID: MDSA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.700582	0.01	-6.67	15.00	AVRG	
ETHENE	47.550000	47.925787	0.01	0.79	15.00	AVRG	
ETHANE	48.365000	47.942494	0.01	-0.87	15.00	AVRG	
PROPANE	67.640000	70.520899	0.01	4.26	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 0657

Lab File ID: MDSA002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	24.341363	0.01	-4.15	15.00	AVRG
ETHENE	47.550000	45.720703	0.01	-3.85	15.00	AVRG
ETHANE	48.365000	47.582178	0.01	-1.62	15.00	AVRG
PROPANE	67.640000	70.457058	0.01	4.16	15.00	AVRG
N-BUTANE	88.662000	93.194000	0.01	5.11	15.00	AVRG
ISO-BUTANE	85.930000	92.818000	0.01	8.02	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM020

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 1143

Lab File ID: MDSA013 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	22.305484	0.01	-12.16	15.00	AVRG
ETHENE	47.550000	42.037109	0.01	-11.59	15.00	AVRG
ETHANE	48.365000	43.764356	0.01	-9.51	15.00	AVRG
PROPANE	67.640000	65.169793	0.01	-3.65	15.00	AVRG
N-BUTANE	88.662000	87.204000	0.01	-1.64	15.00	AVRG
ISO-BUTANE	85.930000	85.842000	0.01	-0.10	15.00	AVRG

FORM VII VOA

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1076	0.1000	108		90 - 110	M	4/22/2015	09:42	B042215 09
	Arsenic	0.0987	0.1000	99		90 - 110	M	4/22/2015	09:42	B042215 09
	Barium	0.1058	0.1000	106		90 - 110	M	4/22/2015	09:42	B042215 09
	Beryllium	0.1085	0.1000	108		90 - 110	M	4/22/2015	09:42	B042215 09
	Cadmium	0.1031	0.1000	103		90 - 110	M	4/22/2015	09:42	B042215 09
	Chromium	0.1093	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Cobalt	0.1069	0.1000	107		90 - 110	M	4/22/2015	09:42	B042215 09
	Copper	0.1086	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Lead	0.1056	0.1000	106		90 - 110	M	4/22/2015	09:42	B042215 09
	Manganese	0.1091	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Molybdenum	0.1092	0.1000	109		90 - 110	M	4/22/2015	09:42	B042215 09
	Nickel	0.1015	0.1000	102		90 - 110	M	4/22/2015	09:42	B042215 09
	Selenium	0.0982	0.1000	98		90 - 110	M	4/22/2015	09:42	B042215 09
	Silver	0.1038	0.1000	104		90 - 110	M	4/22/2015	09:42	B042215 09
	Thallium	0.1029	0.1000	103		90 - 110	M	4/22/2015	09:42	B042215 09
	Vanadium	0.1096	0.1000	110		90 - 110	M	4/22/2015	09:42	B042215 09
LLICV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/22/2015	09:49	B042215 09
	Arsenic	0.0032	0.0030	107		70 - 130	M	4/22/2015	09:49	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Chromium	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	09:49	B042215 09
	Copper	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Manganese	0.0049	0.0050	98		70 - 130	M	4/22/2015	09:49	B042215 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/22/2015	09:49	B042215 09
	Nickel	0.0047	0.0050	94		70 - 130	M	4/22/2015	09:49	B042215 09
	Selenium	0.0053	0.0050	106		70 - 130	M	4/22/2015	09:49	B042215 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	09:49	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	09:49	B042215 09

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0969	0.1000	97		90 - 110	M	4/22/2015	13:23	B042215 09
	Arsenic	0.0965	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Barium	0.0981	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Beryllium	0.0937	0.1000	94		90 - 110	M	4/22/2015	13:23	B042215 09
	Cadmium	0.0929	0.1000	93		90 - 110	M	4/22/2015	13:23	B042215 09
	Chromium	0.0984	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Cobalt	0.0965	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Copper	0.0968	0.1000	97		90 - 110	M	4/22/2015	13:23	B042215 09
	Lead	0.0988	0.1000	99		90 - 110	M	4/22/2015	13:23	B042215 09
	Manganese	0.0979	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Molybdenum	0.0983	0.1000	98		90 - 110	M	4/22/2015	13:23	B042215 09
	Nickel	0.0924	0.1000	92		90 - 110	M	4/22/2015	13:23	B042215 09
	Selenium	0.0929	0.1000	93		90 - 110	M	4/22/2015	13:23	B042215 09
	Silver	0.0951	0.1000	95		90 - 110	M	4/22/2015	13:23	B042215 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/22/2015	13:23	B042215 09
	Vanadium	0.0993	0.1000	99		90 - 110	M	4/22/2015	13:23	B042215 09
LLCCV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/22/2015	13:31	B042215 09
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	13:31	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	13:31	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Chromium	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	13:31	B042215 09
	Copper	0.0048	0.0050	96		70 - 130	M	4/22/2015	13:31	B042215 09
	Lead	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Manganese	0.0051	0.0050	102		70 - 130	M	4/22/2015	13:31	B042215 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Nickel	0.0046	0.0050	92		70 - 130	M	4/22/2015	13:31	B042215 09
	Selenium	0.0046	0.0050	92		70 - 130	M	4/22/2015	13:31	B042215 09
	Silver	0.0020	0.0020	100		70 - 130	M	4/22/2015	13:31	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	13:31	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	13:31	B042215 09

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0961	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Arsenic	0.0957	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Barium	0.0972	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Beryllium	0.0936	0.1000	94		90 - 110	M	4/22/2015	14:32	B042215 09
	Cadmium	0.0918	0.1000	92		90 - 110	M	4/22/2015	14:32	B042215 09
	Chromium	0.0967	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Cobalt	0.0959	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Copper	0.0952	0.1000	95		90 - 110	M	4/22/2015	14:32	B042215 09
	Lead	0.0973	0.1000	97		90 - 110	M	4/22/2015	14:32	B042215 09
	Manganese	0.0985	0.1000	98		90 - 110	M	4/22/2015	14:32	B042215 09
	Molybdenum	0.0993	0.1000	99		90 - 110	M	4/22/2015	14:32	B042215 09
	Nickel	0.0901	0.1000	90		90 - 110	M	4/22/2015	14:32	B042215 09
	Selenium	0.0930	0.1000	93		90 - 110	M	4/22/2015	14:32	B042215 09
	Silver	0.0954	0.1000	95		90 - 110	M	4/22/2015	14:32	B042215 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/22/2015	14:32	B042215 09
	Vanadium	0.0979	0.1000	98		90 - 110	M	4/22/2015	14:32	B042215 09
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/22/2015	14:40	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	14:40	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Chromium	0.0020	0.0020	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/22/2015	14:40	B042215 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/22/2015	14:40	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	14:40	B042215 09
	Manganese	0.0051	0.0050	102		70 - 130	M	4/22/2015	14:40	B042215 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/22/2015	14:40	B042215 09
	Nickel	0.0046	0.0050	92		70 - 130	M	4/22/2015	14:40	B042215 09
	Selenium	0.0049	0.0050	98		70 - 130	M	4/22/2015	14:40	B042215 09
	Silver	0.0020	0.0020	100		70 - 130	M	4/22/2015	14:40	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	14:40	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	14:40	B042215 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0977	0.1000	98		90 - 110	M	4/22/2015	15:17	B042215 09
	Arsenic	0.0968	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Barium	0.0968	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Beryllium	0.0948	0.1000	95		90 - 110	M	4/22/2015	15:17	B042215 09
	Cadmium	0.0924	0.1000	92		90 - 110	M	4/22/2015	15:17	B042215 09
	Chromium	0.0971	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Cobalt	0.0969	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Copper	0.0972	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Lead	0.0984	0.1000	98		90 - 110	M	4/22/2015	15:17	B042215 09
	Manganese	0.0993	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
	Molybdenum	0.0987	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
	Nickel	0.0916	0.1000	92		90 - 110	M	4/22/2015	15:17	B042215 09
	Selenium	0.0947	0.1000	95		90 - 110	M	4/22/2015	15:17	B042215 09
	Silver	0.0969	0.1000	97		90 - 110	M	4/22/2015	15:17	B042215 09
	Thallium	0.0965	0.1000	96		90 - 110	M	4/22/2015	15:17	B042215 09
	Vanadium	0.0987	0.1000	99		90 - 110	M	4/22/2015	15:17	B042215 09
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/22/2015	15:24	B042215 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/22/2015	15:24	B042215 09
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/22/2015	15:24	B042215 09
	Chromium	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/22/2015	15:24	B042215 09
	Copper	0.0048	0.0050	96		70 - 130	M	4/22/2015	15:24	B042215 09
	Lead	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Manganese	0.0052	0.0050	104		70 - 130	M	4/22/2015	15:24	B042215 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/22/2015	15:24	B042215 09
	Nickel	0.0047	0.0050	94		70 - 130	M	4/22/2015	15:24	B042215 09
	Selenium	0.0051	0.0050	102		70 - 130	M	4/22/2015	15:24	B042215 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/22/2015	15:24	B042215 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/22/2015	15:24	B042215 09

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	09:45	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	09:45	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	09:45	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	09:45	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	09:45	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	09:45	B042215 0916 0
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	13:27	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	13:27	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	13:27	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	13:27	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	13:27	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	13:27	B042215 0916 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	14:36	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	14:36	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	14:36	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	14:36	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	14:36	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	14:36	B042215 0916 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/22/2015	15:20	B042215 0916 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/22/2015	15:20	B042215 0916 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/22/2015	15:20	B042215 0916 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/22/2015	15:20	B042215 0916 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/22/2015	15:20	B042215 0916 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/22/2015	15:20	B042215 0916 0

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2167541			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/22/2015	13:56	B042215 0916 0
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/22/2015	13:56	B042215 0916 0
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/22/2015	13:56	B042215 0916 0
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/22/2015	13:56	B042215 0916 0
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/22/2015	13:56	B042215 0916 0
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/22/2015	13:56	B042215 0916 0

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0004				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
	Arsenic	0.0003				-0.00300 - -0.00300	4/22/2015	09:55	B042215 0916 (
	Barium	0.0004				-0.01000 - -0.01000	4/22/2015	09:55	B042215 0916 (
	Beryllium	0.00002				-0.001000 - -0.001000	4/22/2015	09:55	B042215 0916 (
	Cadmium	0.0011			*	-0.00100 - -0.00100	4/22/2015	09:55	B042215 0916 (
	Chromium	0.0006				-0.00400 - -0.00400	4/22/2015	09:55	B042215 0916 (
	Cobalt	0.0007				-0.00600 - -0.00600	4/22/2015	09:55	B042215 0916 (
	Copper	0.0012				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Lead	0.0001				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
	Manganese	0.0013				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Molybdenum	2.1760	2.00000	109		80 - 120%	4/22/2015	09:55	B042215 0916 (
	Nickel	0.0008				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Selenium	0.0001				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Silver	0.0005				-0.00500 - -0.00500	4/22/2015	09:55	B042215 0916 (
	Thallium	0.00002				-0.001000 - -0.001000	4/22/2015	09:55	B042215 0916 (
	Vanadium	0.0001				-0.00200 - -0.00200	4/22/2015	09:55	B042215 0916 (
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/22/2015	09:59	B042215 0916 (
	Arsenic	0.0226	0.02000	113		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Barium	0.0004				-0.00500 - -0.00500	4/22/2015	09:59	B042215 0916 (
	Beryllium	0.00003				-0.001000 - -0.001000	4/22/2015	09:59	B042215 0916 (
	Cadmium	0.0110	0.01000	110		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Chromium	0.0208	0.02000	104		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Cobalt	0.0407	0.04000	102		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Copper	0.0201	0.02000	100		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Lead	0.0002				-0.00200 - -0.00200	4/22/2015	09:59	B042215 0916 (
	Manganese	0.0215	0.02000	108		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Molybdenum	2.2086	2.00000	110		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Nickel	0.0375	0.04000	94		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Selenium	0.0210	0.02000	105		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Silver	0.0209	0.02000	104		80 - 120%	4/22/2015	09:59	B042215 0916 (
	Thallium	0.00001				-0.001000 - -0.001000	4/22/2015	09:59	B042215 0916 (
	Vanadium	0.0446	0.04000	112		80 - 120%	4/22/2015	09:59	B042215 0916 (

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2167542									
	Antimony	mg/L	0.2220	0.2170		98		80 - 120	M
	Arsenic	mg/L	0.2220	0.2114		95		80 - 120	M
	Barium	mg/L	2.2220	2.2545		101		80 - 120	M
	Beryllium	mg/L	0.2220	0.2293		103		80 - 120	M
	Cadmium	mg/L	0.2220	0.2123		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2200		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2169		98		80 - 120	M
	Copper	mg/L	0.2220	0.2136		96		80 - 120	M
	Lead	mg/L	0.2220	0.2252		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2233		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2237		101		80 - 120	M
	Nickel	mg/L	0.2220	0.2157		97		80 - 120	M
	Selenium	mg/L	0.2220	0.2034		92		80 - 120	M
	Silver	mg/L	0.1110	0.1144		103		80 - 120	M
	Thallium	mg/L	0.2220	0.2181		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2199		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68716						
2167541	MB for HBN 68716 [MDIG/50471	MB	QC-WAT	4/22/15	45.0	50.0	
2167542	LCS for HBN 68716 [MDIG/50471	LCS	QC-WAT	4/22/15	45.0	50.0	
2066301002	MRC-MW-29A-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301003	MRC-MW-77B-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301004	MRC-MW-27A-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301005	MRC-MW-27B-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301008	MRC-MW-79B-042115	SAM	WATER	4/22/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0916																										
BLK	1.00	0920			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0924			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0927			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0931			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0935			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0938			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0942			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0945			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0949			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0955			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0959			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1020																										
ZZZZZZ	1.00	1024																										
ZZZZZZ	1.00	1028																										
ZZZZZZ	1.00	1031																										
ZZZZZZ	1.00	1035																										
ZZZZZZ	1.00	1038																										
ZZZZZZ	1.00	1042																										
ZZZZZZ	1.00	1045																										
ZZZZZZ	1.00	1049																										
ZZZZZZ	5.00	1053																										
ZZZZZZ	10.00	1100																										
ZZZZZZ	10.00	1103																										
ZZZZZZ	1.00	1107																										
ZZZZZZ	1.00	1110																										
ZZZZZZ	1.00	1114																										
ZZZZZZ	10.00	1120																										
ZZZZZZ	1.00	1124																										
ZZZZZZ	1.00	1127																										
ZZZZZZ	1.00	1131																										
ZZZZZZ	1.00	1135																										
ZZZZZZ	1.00	1140																										
ZZZZZZ	1.00	1144																										
ZZZZZZ	1.00	1148																										
ZZZZZZ	1.00	1151																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1155																										
ZZZZZZ	1.00	1158																										
ZZZZZZ	1.00	1202																										
ZZZZZZ	1.00	1206																										
ZZZZZZ	1.00	1209																										
ZZZZZZ	1.00	1213																										
ZZZZZZ	1.00	1217																										
ZZZZZZ	1.00	1220																										
ZZZZZZ	1.00	1224																										
ZZZZZZ	1.00	1228																										
ZZZZZZ	1.00	1231																										
ZZZZZZ	1.00	1235																										
ZZZZZZ	1.00	1239																										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1251																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1302																										
ZZZZZZ	1.00	1305																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	10.00	1312																										
ZZZZZZ	10.00	1316																										
ZZZZZZ	10.00	1320																										
CCV6	1.00	1323			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	1327			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1331			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2167541	1.00	1356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2167542	1.00	1400			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1407																										
ZZZZZZ	1.00	1410																										
2066301002	1.00	1414			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066301003	1.00	1418			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066301004	1.00	1421			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066301005	1.00	1425			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066301008	1.00	1429			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
CCV7	1.00	1432			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	1436			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1440			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1443																											
ZZZZZZ	10.00	1451																											
ZZZZZZ	10.00	1455																											
ZZZZZZ	10.00	1459																											
ZZZZZZ	10.00	1502																											
2066301003	10.00	1506														X													
2066301004	10.00	1509														X													
2066301008	10.00	1513														X													
CCV8	1.00	1517			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB7	1.00	1520			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1524			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1530																											
ZZZZZZ	1.00	1534																											
ZZZZZZ	1.00	1538																											
ZZZZZZ	1.00	1541																											

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	09:16																									
BLK	1.00	09:20					X																				
STANDARD 1	1.00	09:24					X																				
STANDARD 2	1.00	09:27					X																				
STANDARD 3	1.00	09:31					X																				
STANDARD 4	1.00	09:35					X																				
STANDARD 5	1.00	09:38					X																				
ICV	1.00	09:42					X																				
ICB1	1.00	09:45					X																				
LLICV	1.00	09:49					X																				
ICS-A1	1.00	09:55					X																				
ICS-AB1	1.00	09:59					X																				
ZZZZZZ	1.00	10:20																									
ZZZZZZ	1.00	10:24																									
ZZZZZZ	1.00	10:28																									
ZZZZZZ	1.00	10:31																									
ZZZZZZ	1.00	10:35																									
ZZZZZZ	1.00	10:38																									
ZZZZZZ	1.00	10:42																									
ZZZZZZ	1.00	10:45																									
ZZZZZZ	1.00	10:49																									
ZZZZZZ	5.00	10:53																									
ZZZZZZ	10.00	11:00																									
ZZZZZZ	10.00	11:03																									
ZZZZZZ	1.00	11:07																									
ZZZZZZ	1.00	11:10																									
ZZZZZZ	1.00	11:14																									
ZZZZZZ	10.00	11:20																									
ZZZZZZ	1.00	11:24																									
ZZZZZZ	1.00	11:27																									
ZZZZZZ	1.00	11:31																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	11:35																										
ZZZZZZ	1.00	11:40																										
ZZZZZZ	1.00	11:44																										
ZZZZZZ	1.00	11:48																										
ZZZZZZ	1.00	11:51																										
ZZZZZZ	1.00	11:55																										
ZZZZZZ	1.00	11:58																										
ZZZZZZ	1.00	12:02																										
ZZZZZZ	1.00	12:06																										
ZZZZZZ	1.00	12:09																										
ZZZZZZ	1.00	12:13																										
ZZZZZZ	1.00	12:17																										
ZZZZZZ	1.00	12:20																										
ZZZZZZ	1.00	12:24																										
ZZZZZZ	1.00	12:28																										
ZZZZZZ	1.00	12:31																										
ZZZZZZ	1.00	12:35																										
ZZZZZZ	1.00	12:39																										
ZZZZZZ	1.00	12:47																										
ZZZZZZ	1.00	12:51																										
ZZZZZZ	1.00	12:54																										
ZZZZZZ	1.00	12:58																										
ZZZZZZ	1.00	13:02																										
ZZZZZZ	1.00	13:05																										
ZZZZZZ	1.00	13:09																										
ZZZZZZ	10.00	13:12																										
ZZZZZZ	10.00	13:16																										
ZZZZZZ	10.00	13:20																										
CCV6	1.00	13:23					X																					
CCB5	1.00	13:27					X																					
LLCCV	1.00	13:31					X																					

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B042215 0916

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
2167541	1.00	13:56					X																					
2167542	1.00	14:00					X																					
ZZZZZZ	1.00	14:03																										
ZZZZZZ	1.00	14:07																										
ZZZZZZ	1.00	14:10																										
2066301002	1.00	14:14					X																					
2066301003	1.00	14:18					X																					
2066301004	1.00	14:21					X																					
2066301005	1.00	14:25					X																					
2066301008	1.00	14:29					X																					
CCV7	1.00	14:32					X																					
CCB6	1.00	14:36					X																					
LLCCV	1.00	14:40					X																					
ZZZZZZ	1.00	14:43																										
ZZZZZZ	10.00	14:51																										
ZZZZZZ	10.00	14:55																										
ZZZZZZ	10.00	14:59																										
ZZZZZZ	10.00	15:02																										
2066301003	10.00	15:06																										
2066301004	10.00	15:09																										
2066301008	10.00	15:13																										
CCV8	1.00	15:17					X																					
CCB7	1.00	15:20					X																					
LLCCV	1.00	15:24					X																					
ZZZZZZ	1.00	15:30																										
ZZZZZZ	1.00	15:34																										
ZZZZZZ	1.00	15:38																										
ZZZZZZ	1.00	15:41																										

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-020

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0916												
BLK	BLK	0920	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0924	101		101		100		101		99		100	
STANDARD 2	STANDARD 2	0927	101		101		98		99		98		98	
STANDARD 3	STANDARD 3	0931	97		113		95		97		97		99	
STANDARD 4	STANDARD 4	0935	102		101		101		102		103		104	
STANDARD 5	STANDARD 5	0938	102		101		101		101		100		102	
ICV	ICV	0942	99		97		97		97		107		104	
ICB1	ICB	0945	103		101		102		102		103		101	
LLICV	LLICV	0949	99		96		97		97		99		97	
ICS-A1	ICSA	0955	92		101		93		101		101		102	
ICS-AB1	ICSAB	0959	96		101		98		105		100		106	
CHECK	ZZZZZZ	1020												
CHECK	ZZZZZZ	1024												
2167667	ZZZZZZ	1028												
2167668	ZZZZZZ	1031												
2066142001	ZZZZZZ	1035												
2167669	ZZZZZZ	1038												
2167670	ZZZZZZ	1042												
2066142002	ZZZZZZ	1045												
2066142003	ZZZZZZ	1049												
2066142003L	ZZZZZZ	1053												
2066142001	ZZZZZZ	1100												
2066142002	ZZZZZZ	1103												
CCV1	ZZZZZZ	1107												
CCB1	ZZZZZZ	1110												
LLCCV	ZZZZZZ	1114												
2066142003	ZZZZZZ	1120												
CCV2	ZZZZZZ	1124												
CCB2	ZZZZZZ	1127												
LLCCV	ZZZZZZ	1131												
2167541	ZZZZZZ	1135												
CCV3	ZZZZZZ	1140												
CCB3	ZZZZZZ	1144												
LLCCV	ZZZZZZ	1148												
CCV4	ZZZZZZ	1151												
2167541	ZZZZZZ	1155												
2167542	ZZZZZZ	1158												
2066115003	ZZZZZZ	1202												
2066115004	ZZZZZZ	1206												
2066115005	ZZZZZZ	1209												
2066301002	ZZZZZZ	1213												
2066301003	ZZZZZZ	1217												
2066301004	ZZZZZZ	1220												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-020

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2066301005	ZZZZZZ	1224												
2066301008	ZZZZZZ	1228												
CCV5	ZZZZZZ	1231												
CCB4	ZZZZZZ	1235												
LLCCV	ZZZZZZ	1239												
2066142001	ZZZZZZ	1247												
2066142001S	ZZZZZZ	1251												
2066142001S	ZZZZZZ	1254												
2066142002	ZZZZZZ	1258												
2066142003	ZZZZZZ	1302												
2066142004	ZZZZZZ	1305												
2066142005	ZZZZZZ	1309												
2066142001	ZZZZZZ	1312												
2066142002	ZZZZZZ	1316												
2066142003	ZZZZZZ	1320												
CCV6	CCV	1323	106		110		109		109		112		115	
CCB5	CCB	1327	106		110		107		108		108		112	
LLCCV	LLCCV	1331	106		109		108		108		109		114	
2167541	MB for HBN 68716	1356	101		111		102		103		102		108	
2167542	LCS for HBN 6871	1400	100		109		102		102		101		107	
2066115003	ZZZZZZ	1403												
2066115004	ZZZZZZ	1407												
2066115005	ZZZZZZ	1410												
2066301002	MRC-MW-29A-04211	1414	95		108		98		101		101		107	
2066301003	MRC-MW-77B-04211	1418	91		110		96		102		102		109	
2066301004	MRC-MW-27A-04211	1421	95		115		99		106		104		111	
2066301005	MRC-MW-27B-04211	1425	102		110		105		105		104		108	
2066301008	MRC-MW-79B-04211	1429	98		111		101		107		104		112	
CCV7	CCV	1432	109		106		110		111		111		115	
CCB6	CCB	1436	107		105		107		110		109		112	
LLCCV	LLCCV	1440	107		104		108		109		109		113	
2066142001	ZZZZZZ	1443												
2066115003	ZZZZZZ	1451												
2066115004	ZZZZZZ	1455												
2066115005	ZZZZZZ	1459												
2066301002	ZZZZZZ	1502												
2066301003	MRC-MW-77B-04211	1506	103		104		105		107		106		111	
2066301004	MRC-MW-27A-04211	1509	104		105		106		108		108		110	
2066301008	MRC-MW-79B-04211	1513	105		105		107		108		107		111	
CCV8	CCV	1517	109		105		111		112		111		112	
CCB7	CCB	1520	108		105		109		110		109		113	
LLCCV	LLCCV	1524	108		105		109		109		110		112	
2066142001	ZZZZZZ	1530												
CCV9	ZZZZZZ	1534												

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-020

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
CCB8	ZZZZZZ	1538												
LLCCV	ZZZZZZ	1541												

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-020

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0916												
BLK	0920	100											
STANDARD 1	0924	101											
STANDARD 2	0927	100											
STANDARD 3	0931	97											
STANDARD 4	0935	101											
STANDARD 5	0938	103											
ICV	0942	99											
ICB	0945	103											
LLICV	0949	98											
ICSA	0955	100											
ICSAB	0959	104											
ZZZZZZ	1020												
ZZZZZZ	1024												
ZZZZZZ	1028												
ZZZZZZ	1031												
ZZZZZZ	1035												
ZZZZZZ	1038												
ZZZZZZ	1042												
ZZZZZZ	1045												
ZZZZZZ	1049												
ZZZZZZ	1053												
ZZZZZZ	1100												
ZZZZZZ	1103												
ZZZZZZ	1107												
ZZZZZZ	1110												
ZZZZZZ	1114												
ZZZZZZ	1120												
ZZZZZZ	1124												
ZZZZZZ	1127												
ZZZZZZ	1131												
ZZZZZZ	1135												
ZZZZZZ	1140												
ZZZZZZ	1144												
ZZZZZZ	1148												
ZZZZZZ	1151												
ZZZZZZ	1155												
ZZZZZZ	1158												
ZZZZZZ	1202												
ZZZZZZ	1206												
ZZZZZZ	1209												
ZZZZZZ	1213												
ZZZZZZ	1217												
ZZZZZZ	1220												
ZZZZZZ	1224												

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-020

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/22/2015 End Date: 04/22/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1228												
ZZZZZZ	1231												
ZZZZZZ	1235												
ZZZZZZ	1239												
ZZZZZZ	1247												
ZZZZZZ	1251												
ZZZZZZ	1254												
ZZZZZZ	1258												
ZZZZZZ	1302												
ZZZZZZ	1305												
ZZZZZZ	1309												
ZZZZZZ	1312												
ZZZZZZ	1316												
ZZZZZZ	1320												
CCV	1323	109											
CCB	1327	108											
LLCCV	1331	107											
MB for HBN 68716	1356	104											
LCS for HBN 6871	1400	105											
ZZZZZZ	1403												
ZZZZZZ	1407												
ZZZZZZ	1410												
MRC-MW-29A-04211	1414	102											
MRC-MW-77B-04211	1418	103											
MRC-MW-27A-04211	1421	104											
MRC-MW-27B-04211	1425	106											
MRC-MW-79B-04211	1429	106											
CCV	1432	111											
CCB	1436	109											
LLCCV	1440	108											
ZZZZZZ	1443												
ZZZZZZ	1451												
ZZZZZZ	1455												
ZZZZZZ	1459												
ZZZZZZ	1502												
MRC-MW-77B-04211	1506	106											
MRC-MW-27A-04211	1509	107											
MRC-MW-79B-04211	1513	108											
CCV	1517	111											
CCB	1520	109											
LLCCV	1524	109											
ZZZZZZ	1530												
ZZZZZZ	1534												
ZZZZZZ	1538												
ZZZZZZ	1541												

Total Metals by 6010C Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.003	1.000	100		90 - 110	P	4/22/2015	09:01	042215A 30
CCV	Iron	2.532	2.500	101		90 - 110	P	4/22/2015	09:14	042215A 30
CCV	Iron	2.327	2.500	93		90 - 110	P	4/22/2015	11:56	042215A 30
CCV	Iron	2.688	2.500	108		90 - 110	P	4/22/2015	12:37	042215A 30
CCV	Iron	2.608	2.500	104		90 - 110	P	4/22/2015	12:56	042215A 30
LLCCV	Iron	0.070	0.060	117		70 - 130	P	4/22/2015	13:02	042215A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.058	0.060	97		70 - 130	P	4/22/2015	09:10	042215A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	09:04	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	12:03	042215A 3015
CCB	Iron	0.023	J	0.060	0.022	0.060	P	4/22/2015	12:40	042215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/22/2015	12:59	042215A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2167531			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/22/2015	12:07	042215A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	114.1	125.0	91		80 - 120%	4/22/2015	09:20	042215A 3015
ICSAB									
	Iron	115.9	125.0	93		80 - 120%	4/22/2015	09:23	042215A 3015
ICSA									
	Iron	121.1	125.0	97		80 - 120%	4/22/2015	13:05	042215A 3015
ICSAB									
	Iron	124.9	125.0	100		80 - 120%	4/22/2015	13:08	042215A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2167532									
	Iron	mg/L	1.11	1.232		111		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	68714						
2167531	MB for HBN 68714 [MDIG/50470	MB	QC-WAT	4/22/15	45.0	50.0	
2167532	LCS for HBN 68714 [MDIG/50470	LCS	QC-WAT	4/22/15	45.0	50.0	
2066301002	MRC-MW-29A-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301003	MRC-MW-77B-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301004	MRC-MW-27A-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301008	MRC-MW-79B-042115	SAM	WATER	4/22/15	45.0	50.0	
2066301005	MRC-MW-27B-042115	SAM	WATER	4/22/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0846												X																
ICAL2	1.00	0849												X																
ICAL3	1.00	0852												X																
ICAL4	1.00	0855												X																
ICAL5	1.00	0858												X																
ICV1	1.00	0901												X																
ICB1	1.00	0904												X																
CRDL1	1.00	0910												X																
CCV1	1.00	0914												X																
HIGH	1.00	0917												X																
ICS-A1	1.00	0920												X																
ICS-AB1	1.00	0923												X																
ZZZZZZ	1.00	0931																												
ZZZZZZ	1.00	0934																												
ZZZZZZ	5.00	0937																												
ZZZZZZ	5.00	0940																												
ZZZZZZ	5.00	0943																												
ZZZZZZ	5.00	0946																												
ZZZZZZ	5.00	0950																												
ZZZZZZ	5.00	0953																												
ZZZZZZ	1.00	0956																												
ZZZZZZ	1.00	0959																												
ZZZZZZ	1.00	1002																												
ZZZZZZ	1.00	1005																												
ZZZZZZ	2.00	1008																												
ZZZZZZ	1.00	1011																												
ZZZZZZ	1.00	1014																												
ZZZZZZ	1.00	1018																												
ZZZZZZ	5.00	1021																												
ZZZZZZ	5.00	1024																												
ZZZZZZ	5.00	1027																												
ZZZZZZ	5.00	1030																												
ZZZZZZ	5.00	1034																												
ZZZZZZ	5.00	1037																												
ZZZZZZ	1.00	1040																												
ZZZZZZ	1.00	1043																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1046																								
ZZZZZZ	1.00	1049																								
ZZZZZZ	1.00	1052																								
ZZZZZZ	1.00	1056																								
ZZZZZZ	5.00	1059																								
ZZZZZZ	5.00	1102																								
ZZZZZZ	5.00	1105																								
ZZZZZZ	5.00	1108																								
ZZZZZZ	5.00	1112																								
ZZZZZZ	5.00	1115																								
ZZZZZZ	1.00	1118																								
ZZZZZZ	1.00	1121																								
ZZZZZZ	5.00	1124																								
ZZZZZZ	5.00	1127																								
ZZZZZZ	5.00	1130																								
ZZZZZZ	5.00	1133																								
ZZZZZZ	5.00	1137																								
ZZZZZZ	1.00	1140																								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1146																								
ZZZZZZ	1.00	1149																								
ZZZZZZ	5.00	1153																								
CCV5	1.00	1156											X													
ZZZZZZ	1.00	1159																								
CCB5	1.00	1203											X													
2167531	1.00	1207											X													
2167532	1.00	1210											X													
ZZZZZZ	5.00	1213																								
ZZZZZZ	5.00	1216																								
ZZZZZZ	5.00	1219																								
ZZZZZZ	5.00	1222																								
2066301002	1.00	1225											X													
2066301003	1.00	1228											X													
2066301004	1.00	1231											X													
ZZZZZZ	1.00	1234																								
CCV6	1.00	1237											X													

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB6	1.00	1240												X													
2066301008	1.00	1243												X													
ZZZZZZ	1.00	1246																									
2066301005	1.00	1250												X													
CCV7	1.00	1256												X													
CCB7	1.00	1259												X													
LLCCV	1.00	1302												X													
ICS-A2	1.00	1305												X													
ICS-AB2	1.00	1308												X													
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1431																									
ZZZZZZ	1.00	1434																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1441																									
ZZZZZZ	1.00	1444																									
ZZZZZZ	1.00	1447																									
ZZZZZZ	1.00	1450																									
ZZZZZZ	1.00	1453																									
ZZZZZZ	1.00	1456																									
ZZZZZZ	1.00	1459																									
ZZZZZZ	1.00	1502																									
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1513																									

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042215A 3015

Start Date: 4/22/2015 End Date: 4/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1519																								
ZZZZZZ	1.00	1522																								
ZZZZZZ	5.00	1525																								
ZZZZZZ	5.00	1528																								
ZZZZZZ	25.00	1532																								
ZZZZZZ	5.00	1535																								
ZZZZZZ	5.00	1538																								
ZZZZZZ	5.00	1541																								
ZZZZZZ	5.00	1545																								
ZZZZZZ	1.00	1548																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1557																								
ZZZZZZ	1.00	1600																								
ZZZZZZ	1.00	1604																								
ZZZZZZ	1.00	1607																								

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	4/27/2015	12:00	042715W
CCV	Mercury	0.0042	0.004	105		90 - 110	CV	4/27/2015	12:25	042715W
CCV	Mercury	0.0042	0.004	105		90 - 110	CV	4/27/2015	12:38	042715W
CCV	Mercury	0.0042	0.004	105		90 - 110	CV	4/27/2015	12:51	042715W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/27/2015	12:01	042715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/27/2015	12:26	042715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/27/2015	12:39	042715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/27/2015	12:52	042715W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169522			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/27/2015	12:34	042715W

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066301003 **Client ID:** MRC-MW-77B-042115S **LIMS ID:** 2169524

Percent Solids for Sample: 0.00 **Spiked ID:** 2066301003S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** _____ **SAS No.:** _____

Matrix: WATER **Sample ID:** 2066301003 **Client ID:** MRC-MW-77B-042115SD **LIMS ID:** 2169525

Percent Solids for Sample: 0.00 **Spiked ID:** 2066301003SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** _____ **SAS No.:** _____

Matrix: WATER **Sample ID:** 2066301003S **Client ID:** MRC-MW-77B-042115SD **LIMS ID:** 2169525

Percent Solids for Sample: 0.00 **Duplicate ID:** 2066301003SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0053		0.0053		0.0		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169523									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-020

Contract: TMM020|MRC GW 2015 **Lab Code:** CAS **Method:** CV

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69485						
2169522	MB for HBN 69485 [MDIG/50553	MB	QC-WAT	4/27/15	25.0	25.0	
2169523	LCS for HBN 69485 [MDIG/50553	LCS	QC-WAT	4/27/15	25.0	25.0	
2066301003	MRC-MW-77B-042115	SAM	WATER	4/27/15	25.0	25.0	
2066301003S	MRC-MW-77B-042115S	MS	WATER	4/27/15	25.0	25.0	
2066301003SD	MRC-MW-77B-042115SD	MSD	WATER	4/27/15	25.0	25.0	
2066301004	MRC-MW-27A-042115	SAM	WATER	4/27/15	25.0	25.0	
2066301005	MRC-MW-27B-042115	SAM	WATER	4/27/15	25.0	25.0	
2066301008	MRC-MW-79B-042115	SAM	WATER	4/27/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Cetac Hg Method: CV Run Number: 042715W

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1153																X									
Standard #1 (0.2ppb	1.00	1154																X									
	1.00	1155																X									
	1.00	1156																X									
	1.00	1157																X									
	1.00	1158																X									
ICV1	1.00	1200																X									
ICB1	1.00	1201																X									
ZZZZZZ	1.00	1202																									
ZZZZZZ	1.00	1203																									
ZZZZZZ	1.00	1204																									
ZZZZZZ	1.00	1205																									
ZZZZZZ	1.00	1206																									
ZZZZZZ	1.00	1207																									
ZZZZZZ	1.00	1208																									
ZZZZZZ	1.00	1209																									
ZZZZZZ	1.00	1210																									
ZZZZZZ	1.00	1211																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1214																									
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1216																									
ZZZZZZ	1.00	1217																									
ZZZZZZ	1.00	1218																									
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1220																									
ZZZZZZ	1.00	1221																									
ZZZZZZ	1.00	1222																									
ZZZZZZ	1.00	1223																									
ZZZZZZ	1.00	1224																									
CCV2	1.00	1225																X									
CCB2	1.00	1226																X									
ZZZZZZ	1.00	1227																									
ZZZZZZ	1.00	1228																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1231																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM020|MRC GW 2015

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-020

Instrument ID Number: Cetac Hg Method: CV Run Number: 042715W

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1232																										
ZZZZZZ	1.00	1233																										
2169522	1.00	1234																X										
2169523	1.00	1235																X										
ZZZZZZ	1.00	1236																										
ZZZZZZ	1.00	1237																										
CCV3	1.00	1238																X										
CCB3	1.00	1239																X										
2066301003	1.00	1240																X										
2066301003S	1.00	1241																X										
2066301003SD	1.00	1242																X										
2066301004	1.00	1244																X										
2066301005	1.00	1245																X										
2066301008	1.00	1246																X										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1248																										
ZZZZZZ	1.00	1249																										
ZZZZZZ	1.00	1250																										
CCV4	1.00	1251																X										
CCB4	1.00	1252																X										
ZZZZZZ	1.00	1253																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1256																										
ZZZZZZ	1.00	1257																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1259																										
ZZZZZZ	1.00	1300																										
ZZZZZZ	1.00	1301																										
ZZZZZZ	1.00	1302																										
ZZZZZZ	1.00	1303																										
ZZZZZZ	1.00	1304																										
ZZZZZZ	1.00	1305																										
ZZZZZZ	1.00	1306																										
ZZZZZZ	1.00	1308																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1310																										

Total Alkalinity by Method 2320B Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2320B SDG No.: TMM-020

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/22/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/22/15	(2)	(1)4/22/15	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Alkalinity	1.29	J	2.08	J	2.06	J						

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 2320B

SDG No.: TMM-020

Instrument ID: PC-Titration Plus

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)
Total Alkalinity	50	47	95		90-110	50	53	106		54	108		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Ammonia by Method 4500NH3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D SDG No.: TMM-020

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/30/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/30/15	(2)	(1)4/30/15	(2)	(1)	(2)	Preparation Blank A ID: 2171208 (1)4/30/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.10	U	0.09	J	0.07	J			0.09	J		

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-020

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/30/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/30/15	Recovery (%)	(2)	Conc. Recovered (1)4/30/15	Recovery (%)	(2)	Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	9.82	98		90-110	10.0	9.44	94		9.23	92		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 4500NH3D
SDG No.: TMM-020

Matrix (soil/water): water
Lab Sample ID: 2171208
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/30/2015
Instrument ID: ISE
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.27	93		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Anions by Method 300 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-020

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/22/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/22/15	(2)	(1)4/22/15	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.14	J	0.21	J	0.27	J						
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U						
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U						
Sulfate	0.13	J	1.0	U	0.44	J						

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-020

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/23/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/23/15	(2)	(1)4/23/15	(2)	(1)4/23/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.12	J	0.21	J	0.21	J	0.24	J				
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Sulfate	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.5	102		90-110	20.0	--	--		20.6	103		90-110
Nitrite-Nitrogen	0.50	0.54	108		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	2.50	2.61	104		90-110	2.50	--	--		2.63	105		90-110
Sulfate	20.0	20.7	104		90-110	20.0	--	--		20.9	105		90-110
Chloride	40.0	38.5	96		90-110	40.0	38.9	97		--	--		90-110
Nitrite-Nitrogen	1.00	1.05	105		90-110	1.00	1.04	104		--	--		90-110
Nitrate-Nitrogen	5.00	4.94	99		90-110	5.00	4.99	100		--	--		90-110
Sulfate	40.0	38.5	96		90-110	40.0	38.8	97		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Conc. Recovered (1)4/22/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.47	99		90-110	2.50	--	--		2.61	104		90-110
Nitrite-Nitrogen	0.50	0.47	94		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	0.50	0.46	92		90-110	0.50	--	--		0.49	98		90-110
Sulfate	2.50	2.51	100		90-110	2.50	--	--		2.41	96		90-110
Chloride	5.00	5.08	102		90-110	5.00	5.20	104		--	--		90-110
Nitrite-Nitrogen	1.00	1.00	100		90-110	1.00	1.03	103		--	--		90-110
Nitrate-Nitrogen	1.00	1.06	106		90-110	1.00	1.07	107		--	--		90-110
Sulfate	5.00	5.07	101		90-110	5.00	5.21	104		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.3	102		90-110	20.0	--	--		20.4	102		90-110
Nitrite-Nitrogen	0.50	0.54	108		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	2.50	2.52	101		90-110	2.50	--	--		2.56	102		90-110
Sulfate	20.0	20.5	102		90-110	20.0	--	--		20.5	102		90-110
Chloride	40.0	39.1	98		90-110	40.0	39.3	98		--	--		90-110
Nitrite-Nitrogen	1.00	1.01	101		90-110	1.00	1.07	107		--	--		90-110
Nitrate-Nitrogen	5.00	4.93	99		90-110	5.00	5.00	100		--	--		90-110
Sulfate	40.0	38.7	97		90-110	40.0	38.8	97		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.55	102		90-110	2.50	--	--		2.65	106		90-110
Nitrite-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.50	100		90-110
Sulfate	2.50	2.56	102		90-110	2.50	--	--		2.37	95		90-110
Chloride	5.00	5.23	105		90-110	5.00	5.24	105		--	--		90-110
Nitrite-Nitrogen	1.00	0.99	99		90-110	1.00	1.00	100		--	--		90-110
Nitrate-Nitrogen	1.00	1.05	105		90-110	1.00	1.03	103		--	--		90-110
Sulfate	5.00	5.18	104		90-110	5.00	5.18	104		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Chloride	20.0	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	2.50	--	--								90-110
Sulfate	20.0	--	--								90-110
Chloride	40.0	39.7	99								90-110
Nitrite-Nitrogen	1.00	1.09	109								90-110
Nitrate-Nitrogen	5.00	4.92	98								90-110
Sulfate	40.0	39.1	98								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-020

Instrument ID: ICS2000
Concentration Units: mg/L

Analyte	Continuing Calibration										
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	0.50	--	--								90-110
Sulfate	2.50	--	--								90-110
Chloride	5.00	5.32	106								90-110
Nitrite-Nitrogen	1.00	1.01	101								90-110
Nitrate-Nitrogen	1.00	1.02	102								90-110
Sulfate	5.00	5.03	101								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-020

Matrix (soil/water): water
Lab Sample ID: 2167614
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/22/2015
Instrument ID: DX-500
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	19.9	99		90-110
Nitrite-nitrogen	0.50	0.54	108		90-110
Nitrate-nitrogen	2.50	2.49	100		90-110
Sulfate	20.0	19.9	99		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-020

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/22/2015
Instrument ID: DX-500
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.60	104		90-110
Nitrite-nitrogen	0.50	0.50	100		90-110
Nitrate-nitrogen	0.50	0.52	104		90-110
Sulfate	2.50	2.59	104		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-020
Matrix (soil/water):	water	Lab Sample ID:	2168162
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/23/2015	Instrument ID:	ICS2000
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	19.9	99		90-110
Nitrite-nitrogen	0.50	0.51	102		90-110
Nitrate-nitrogen	2.50	2.44	98		90-110
Sulfate	20.0	19.7	99		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-020

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/23/2015
Instrument ID: ICS2000
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.61	104		90-110
Nitrite-nitrogen	0.50	0.49	98		90-110
Nitrate-nitrogen	0.50	0.51	102		90-110
Sulfate	2.50	2.48	99		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Total Organic Carbon by Method 9060A Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 9060 SDG No.: TMM-020

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/29/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/29/15	(2)	(1)4/29/15	(2)	(1)4/29/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060 SDG No.: TMM-020

Instrument ID: Vario TOC
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.92	92		85-115	5.00	5.02	100		--	--		90-110
						8.00	--	--		8.07	101		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060 SDG No.: TMM-020

Instrument ID: Vario TOC
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)	
Total Organic Carbon	5.00	4.99	100								90-110	
	8.00	--	--								90-110	

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Total Dissolved Solidsby Method 2540C Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2540C SDG No.: TMM-020

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)	(2)	Continuing Calibration Blanks (mg/L) (1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2168386 (1) 4/23/15	(2)	Preparation Blank B ID: (1)	(2)
Total Dissolved Solids									5	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Sample Description
MRC-MW-27A-042115

Form 7
Duplicate Summary

Analysis Method:	2540C	SDG No.:	TMM-020
Matrix (soil/water):	water	Lab Sample ID:	2066301004
Units:	mg/L	Lab File ID:	N/A
Instrument ID:	N/A	Lab Sample Dup. ID:	2168389
GC Column:	N/A	Dup. Lab File ID:	N/A
Sample % Moisture:	N/A	Dup. % Moisture:	N/A

Analyte	Sample Concentration	Duplicate Concentration	Relative Percent Difference (RPD)	(1)	Acceptable Limit
Total Dissolved Solids	1180	1028	13.8	*	5%

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 2540C
SDG No.: TMM-020

Matrix (soil/water): water
Lab Sample ID: 2168387
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/23/2015
Instrument ID: N/A
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Dissolved Solids	500	502	100		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Orthophosphate by Method 365.3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 365.3 SDG No.: TMM-020

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/22/15 (2)		Continuing Calibration Blanks (mg/L) (1)4/22/15 (2)		(1) (2)		(1) (2)		Preparation Blank A ID: (1) (2)		Preparation Blank B ID: (1) (2)	
Orthophosphate	0.02	U	0.02	U								

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 365.3 SDG No.: TMM-020

Instrument ID: DR5000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%) (2)		Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/22/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Orthophosphate	0.200	0.200	100		90-110	0.200	--	--					90-110
						0.800	0.792	99					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JULY 26, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/OVG/1,4-DIOXANE/TOTAL METALS/PERCHLORATE/ MISCELLANEOUS PARAMETERS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2066604

SAMPLES:

6/Aqueous/VOCs

MRC-MW-116A-042215	MRC-MW-60A-042215	MRC-MW-60B-042215
MRC-MW-81B-042215	MRC-MW-87B-042215	TB-042215

2/Aqueous/OVG

MRC-MW-60B-042215	MRC-MW-81B-042215

1/Aqueous/1,4-Dioxane

MRC-MW-91A-042215

5/Aqueous/Metals

MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-81A-042215
MRC-MW-81B-042215	MRC-MW-87B-042215	

2/Aqueous/Perchlorate

MRC-MW-60A-042215	MRC-MW-60B-042215

2/Aqueous/Miscellaneous

MRC-MW-60B-042215	MRC-MW-81B-042215

Overview

The sample set for LMC-MRC, SDG 2066604 consisted of seven (7) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), organic volatile gases (OVG), 1,4-dioxane, metals, perchlorate, and/or miscellaneous parameters (alkalinity, ammonia, chloride, dissolved organic carbon, nitrate, nitrite, orthophosphate, sulfate, and total dissolved solids). No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 22, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, and 9060A, EPA Methods 300, 365.3, 522, and 6850, Standard Methods 4500NH3D, 2320B, and 2540C, and RSK-175 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation

blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Minor

- The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane	0.52	2.6
Carbon disulfide	0.38	1.9
1,4-Dichlorobenzene	0.27	1.35

Maximum concentration detected in the laboratory method blank 2170306 affecting all samples, except MRC-MW-116A-042215.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U). The trip blank was not qualified for laboratory blank contamination.

- Molybdenum was detected in the laboratory preparation blank at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.00078	0.0039

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U).

- Matrix spike duplicate (MSD) percent recovery (%R) for cobalt was greater than the quality control (QC) limit. The matrix spike was within QC limits. The result for cobalt in parent sample MRC-MW-81A-042215 was qualified as estimated high (J).

- The following analytes were detected in the laboratory calibration and preparation blanks at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Alkalinity(1)	3.25	16.25
Ammonia(2)	0.093	0.465

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Ammonia(3)	0.090	0.45
Chloride(4)	0.24	1.2

Chloride[5]	0.15	0.75

1 – Maximum concentration in calibration blank.
2 – Maximum concentration in preparation blank 2173012.
3 – Maximum concentration in preparation blank 2174296.
4 – Maximum concentration in calibration blank on 4/23/15.
5 – Maximum concentration in calibration blank on 4/24/15.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

Matrix spike (MS) and MSD %Rs were zero for 1,1-dichloroethene and trichlorethene. LCS %Rs were acceptable No action was taken on this basis.

MS %R was less than QC limits for o-xylene. The MSD %R was acceptable and the LCS %R was acceptable. No action was taken on this basis.

MS and MSD %Rs were greater than QC limits for methyl acetate and methyl cyclohexane. LCS %Rs were acceptable No action was taken on this basis.

MS %R was less than QC limits for perchlorate. The MSD %R was acceptable and the LCS %R was acceptable. No action was taken on this basis.

Chloride, dissolved organic carbon, nitrate, nitrite, and sulfate were analyzed at dilution. Resulting in elevated detection limits for nitrite.

Executive Summary

Laboratory Performance: Calibration noncompliance was noted for VOCs. Contaminants were detected in the laboratory method blanks.

Other Factors Affecting Data Quality: Matrix spike noncompliance was noted for VOCs, metals, and perchlorate.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-MW-116A-042215			MRC-MW-60A-042215			MRC-MW-60A-042215-DL			MRC-MW-60B-042215		
SDG: 2066604	LAB_ID	2066604008			2066604004			2066604004			2066604005		
FRACTION: OV	SAMP_DATE	4/22/2015			4/22/2015			4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U					0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U					0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U					0.98	J	P
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U					0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U					0.28	U	
1,1-DICHLOROETHENE		0.29	U		3.1						8.6		
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U					0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.95	J	P				0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U					1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U					0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U					0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U					0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U					0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U					0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U					0.27	U	
1,4-DIOXANE		58.9	UR	C	58.9	UR	C				58.9	UR	C
2-BUTANONE		1.8	U		1.8	U					1.8	U	
2-HEXANONE		1.3	U		1.3	U					1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U					1.5	U	
ACETONE		3.1	U		3.7	J	P				3.1	U	
BENZENE		0.23	U		0.72	J	P				0.35	J	P
BROMOCHLOROMETHANE		0.32	U		0.32	U					0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U					0.27	U	
BROMOFORM		0.4	U		0.4	U					0.4	U	
BROMOMETHANE		0.66	J	P	0.39	U					0.39	U	
CARBON DISULFIDE		0.23	U		0.29	U	A				0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U					0.31	U	
CHLOROBENZENE		0.19	U		0.19	U					0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U					0.45	U	
CHLOROETHANE		0.33	U		0.33	U					0.33	U	
CHLOROFORM		0.21	U		0.21	U					0.21	U	
CHLOROMETHANE		0.31	U		0.31	U					0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U					789			170		
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U					0.31	U	
CYCLOHEXANE		0.29	U		1.7						0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-60B-042215-DL			MRC-MW-81B-042215			MRC-MW-81B-042215-DL			MRC-MW-87B-042215		
SDG: 2066604	LAB_ID	2066604005			2066604007			2066604007			2066604002		
FRACTION: OV	SAMP_DATE	4/22/2015			4/22/2015			4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.22	U					0.22	U	
1,1,2,2-TETRACHLOROETHANE					0.34	U					0.34	U	
1,1,2-TRICHLOROETHANE					0.33	U					0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE					0.26	U					0.26	U	
1,1-DICHLOROETHANE					114						0.28	U	
1,1-DICHLOROETHENE								480			0.29	U	
1,2,3-TRICHLOROBENZENE					0.93	U					0.93	U	
1,2,4-TRICHLOROBENZENE					0.82	U					0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE					1.5	U					1.5	U	
1,2-DIBROMOETHANE					0.28	U					0.28	U	
1,2-DICHLOROBENZENE					0.38	U					0.38	U	
1,2-DICHLOROETHANE					0.32	U					0.32	U	
1,2-DICHLOROPROPANE					0.24	U					0.24	U	
1,3-DICHLOROBENZENE					0.25	U					0.25	U	
1,4-DICHLOROBENZENE					0.39	U	A				0.27	U	
1,4-DIOXANE					58.9	UR	C				58.9	UR	C
2-BUTANONE					1.8	U					1.8	U	
2-HEXANONE					1.3	U					1.3	U	
4-METHYL-2-PENTANONE					1.5	U					1.5	U	
ACETONE					3.1	U					14.3		
BENZENE					4.6						0.23	U	
BROMOCHLOROMETHANE					0.32	U					0.32	U	
BROMODICHLOROMETHANE					0.27	U					0.27	U	
BROMOFORM					0.4	U					0.4	U	
BROMOMETHANE					0.39	U					0.56	U	A
CARBON DISULFIDE					0.42	U	A				0.29	U	A
CARBON TETRACHLORIDE					0.31	U					0.31	U	
CHLOROBENZENE					0.19	U					0.19	U	
CHLORODIBROMOMETHANE					0.45	U					0.45	U	
CHLOROETHANE					0.33	U					0.33	U	
CHLOROFORM					0.21	U					0.21	U	
CHLOROMETHANE					0.31	U					0.31	U	
CIS-1,2-DICHLOROETHENE								10900			0.32	U	
CIS-1,3-DICHLOROPROPENE					0.31	U					0.31	U	
CYCLOHEXANE					0.48	J	P				0.29	U	

PROJ_NO: 06247	NSAMPLE	TB-042215		
SDG: 2066604	LAB_ID	2066604001		
FRACTION: OV	SAMP_DATE	4/22/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U	
1,1-DICHLOROETHANE		0.28	U	
1,1-DICHLOROETHENE		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U	
1,2-DIBROMOETHANE		0.28	U	
1,2-DICHLOROBENZENE		0.38	U	
1,2-DICHLOROETHANE		0.32	U	
1,2-DICHLOROPROPANE		0.24	U	
1,3-DICHLOROBENZENE		0.25	U	
1,4-DICHLOROBENZENE		0.27	U	
1,4-DIOXANE		58.9	UR	C
2-BUTANONE		1.8	U	
2-HEXANONE		1.3	U	
4-METHYL-2-PENTANONE		1.5	U	
ACETONE		3.1	U	
BENZENE		0.23	U	
BROMOCHLOROMETHANE		0.32	U	
BROMODICHLOROMETHANE		0.27	U	
BROMOFORM		0.4	U	
BROMOMETHANE		0.61	J	P
CARBON DISULFIDE		0.27	J	P
CARBON TETRACHLORIDE		0.31	U	
CHLOROBENZENE		0.19	U	
CHLORODIBROMOMETHANE		0.45	U	
CHLOROETHANE		0.33	U	
CHLOROFORM		0.21	U	
CHLOROMETHANE		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U	
CYCLOHEXANE		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-116A-042215			MRC-MW-60A-042215			MRC-MW-60A-042215-DL			MRC-MW-60B-042215		
SDG: 2066604	LAB_ID	2066604008			2066604004			2066604004			2066604005		
FRACTION: OV	SAMP_DATE	4/22/2015			4/22/2015			4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U					0.33	U	
ETHYLBENZENE		0.34	U		0.34	U					0.34	U	
ISOPROPYLBENZENE		0.22	U		0.95	J	P				0.22	U	
M+P-XYLENES		0.52	U		0.52	U					0.52	U	
METHYL ACETATE		0.32	U		0.32	U					0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U					0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U					0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U					0.45	U	
O-XYLENE		0.33	U		0.33	U					0.33	U	
STYRENE		0.24	U		0.24	U					0.24	U	
TETRACHLOROETHENE		0.35	U		11						14.8		
TOLUENE		0.23	U		0.72	J	P				0.29	J	P
TRANS-1,2-DICHLOROETHENE		0.26	U		6.4						1.9		
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U					0.29	U	
TRICHLOROETHENE		0.33	U					741					
TRICHLOROFLUOROMETHANE		0.24	U		0.69	J	P				0.24	U	
VINYL CHLORIDE		0.3	U		122						4.6		

PROJ_NO: 06247	NSAMPLE	MRC-MW-60B-042215-DL			MRC-MW-81B-042215			MRC-MW-81B-042215-DL			MRC-MW-87B-042215		
SDG: 2066604	LAB_ID	2066604005			2066604007			2066604007			2066604002		
FRACTION: OV	SAMP_DATE	4/22/2015			4/22/2015			4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE					0.33	U					0.33	U	
ETHYLBENZENE					0.58	J	P				0.34	U	
ISOPROPYLBENZENE					0.25	J	P				0.22	U	
M+P-XYLENES					0.92	J	P				0.52	U	
METHYL ACETATE					0.32	U					0.32	U	
METHYL CYCLOHEXANE					0.3	U					0.3	U	
METHYL TERT-BUTYL ETHER					0.33	U					0.33	U	
METHYLENE CHLORIDE					0.45	U					0.45	U	
O-XYLENE					4						0.33	U	
STYRENE					0.24	U					0.24	U	
TETRACHLOROETHENE					0.45	J	P				0.35	U	
TOLUENE					1						0.23	U	
TRANS-1,2-DICHLOROETHENE					122						0.26	U	
TRANS-1,3-DICHLOROPROPENE					0.29	U					0.29	U	
TRICHLOROETHENE		4070						3010			2.3		
TRICHLOROFLUOROMETHANE					0.24	U					0.24	U	
VINYL CHLORIDE					147						0.3	U	

PROJ_NO: 06247	NSAMPLE	TB-042215		
SDG: 2066604	LAB_ID	2066604001		
FRACTION: OV	SAMP_DATE	4/22/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U	
ETHYLBENZENE		0.34	U	
ISOPROPYLBENZENE		0.22	U	
M+P-XYLENES		0.52	U	
METHYL ACETATE		0.32	U	
METHYL CYCLOHEXANE		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U	
METHYLENE CHLORIDE		0.45	U	
O-XYLENE		0.33	U	
STYRENE		0.24	U	
TETRACHLOROETHENE		0.35	U	
TOLUENE		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U	
TRICHLOROETHENE		0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U	
VINYL CHLORIDE		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-60B-042215			MRC-MW-81B-042215		
SDG: 2066604	LAB_ID	2066604005			2066604007		
FRACTION: OVG	SAMP_DATE	4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		0.23	U		0.59	J	P
ETHENE		0.4	U		5.8		
METHANE		54.9			701		

PROJ_NO: 06247	NSAMPLE	MRC-MW-91A-042215		
SDG: 2066604	LAB_ID	2066604003		
FRACTION: OS	SAMP_DATE	4/22/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,4-DIOXANE		4.1		

PROJ_NO: 06247	NSAMPLE	MRC-MW-60A-042215			MRC-MW-60B-042215			MRC-MW-81A-042215			MRC-MW-81A-042215-RE		
SDG: 2066604	LAB_ID	2066604004			2066604005			2066604006			2066604006		
FRACTION: M	SAMP_DATE	4/22/2015			4/22/2015			4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U				
ARSENIC		0.001	U		0.001	U					0.0034		
BARIUM		0.059			0.046			0.17					
BERYLLIUM		0.00091	J	P	0.0003	U		0.0013					
CADMIUM		0.00037	U		0.00037	U		0.00037	U				
CHROMIUM		0.00074	U		0.00074	U		0.0008	J	P			
COBALT		0.057	J	D	0.03	J	D	0.067	J	D			
COPPER		0.0019	U		0.0019	U		0.0025	J	P			
IRON		27.2			5			76.8					
LEAD		0.00074	U		0.00074	U		0.00074	U				
MANGANESE		4			2			6.4					
MERCURY		0.00017	U		0.00017	U					0.00017	U	
MOLYBDENUM		0.00074	U		0.00074	U		0.00074	U				
NICKEL		0.063			0.061			0.05					
SELENIUM		0.0019	U		0.0019	U		0.0085					
SILVER		0.00074	U		0.00074	U		0.00074	U				
THALLIUM		0.0003	U		0.0003	U		0.0003	U				
VANADIUM		0.00074	U		0.00074	U		0.00074	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-81B-042215			MRC-MW-87B-042215		
SDG: 2066604	LAB_ID	2066604007			2066604002		
FRACTION: M	SAMP_DATE	4/22/2015			4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.0014	J	P
ARSENIC		0.001	U		0.0012	J	P
BARIUM		0.48			0.067		
BERYLLIUM		0.00039	J	P	0.00051	J	P
CADMIUM		0.00037	U		0.00037	U	
CHROMIUM		0.0031			0.006		
COBALT		0.025	J	D	0.0019	J	DP
COPPER		0.0036	J	P	0.0062		
IRON		66.7			4.3		
LEAD		0.00074	U		0.0012	J	P
MANGANESE		3.2			0.086		
MERCURY		0.00017	U		0.00017	U	
MOLYBDENUM		0.0013	U	A	0.01		
NICKEL		0.026			0.0055	J	P
SELENIUM		0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U	
VANADIUM		0.0015	J	P	0.0051		

PROJ_NO: 06247	NSAMPLE	MRC-MW-60A-042215			MRC-MW-60B-042215						MRC-MW-81B-042215		
SDG: 2066604	LAB_ID	1511437001			1511437002						2066604007		
FRACTION: MISC	SAMP_DATE	4/22/2015			4/22/2015						4/22/2015		
MEDIA: WATER	QC_TYPE	NM			NM						NM		
	UNITS	UG/L			MG/L			UG/L			MG/L		
	PCT_SOLIDS				0.0						0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY					39						211		
AMMONIA-N					1.02						0.084	U	A
CHLORIDE					40.6						120		
DISSOLVED ORGANIC CARBON					0.32	J	P				18.1		
NITRATE-N					0.092	U					0.18	J	P
NITRITE-N					0.11	U					0.044	U	
ORTHOPHOSPHATE					0.0025	U					0.011	J	P
PERCHLORATE		0.06	U					0.06	U				
SULFATE					3.8	J	P				1.6	J	P
TOTAL DISSOLVED SOLIDS					82						456		

Appendix B

Results as Reported by the Laboratory

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NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604001** Date Collected: 4/22/2015 20:21 Matrix: Water

Sample ID: **TB-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 03:57	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 03:57	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 03:57	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 03:57	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 03:57	JPA	A
Bromomethane	0.61J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 03:57	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 03:57	JPA	A
Carbon Disulfide	0.27J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 03:57	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 03:57	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 03:57	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 03:57	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 03:57	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 03:57	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 03:57	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 03:57	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 03:57	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 03:57	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 03:57	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 03:57	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 03:57	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 03:57	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 03:57	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 03:57	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 03:57	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 03:57	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 03:57	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 03:57	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 03:57	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 03:57	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 03:57	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 03:57	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 03:57	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 03:57	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 03:57	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 03:57	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 03:57	JPA	A

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State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604001** Date Collected: 4/22/2015 20:21 Matrix: Water

Sample ID: **TB-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 03:57	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 03:57	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 03:57	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 03:57	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 03:57	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/29/15 03:57	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/29/15 03:57	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 03:57	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/29/15 03:57	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 03:57	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 03:57	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 03:57	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 03:57	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/29/15 03:57	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 03:57	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 03:57	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133	SW846 8260C			4/29/15 03:57	JPA	A
4-Bromofluorobenzene (S)	98.4		%	79 - 114	SW846 8260C			4/29/15 03:57	JPA	A
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260C			4/29/15 03:57	JPA	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C			4/29/15 03:57	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604002** Date Collected: 4/22/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-87B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	14.3		ug/L	10.0	3.1	SW846 8260C		4/29/15 05:22	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 05:22	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:22	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:22	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 05:22	JPA	A
Bromomethane	0.56J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 05:22	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 05:22	JPA	A
Carbon Disulfide	0.29J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 05:22	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:22	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 05:22	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 05:22	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:22	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 05:22	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:22	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:22	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 05:22	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:22	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 05:22	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 05:22	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:22	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:22	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:22	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:22	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:22	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:22	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:22	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 05:22	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:22	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:22	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 05:22	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 05:22	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:22	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 05:22	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 05:22	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 05:22	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 05:22	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604002** Date Collected: 4/22/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-87B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:22	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 05:22	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 05:22	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:22	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 05:22	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/29/15 05:22	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/29/15 05:22	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 05:22	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/29/15 05:22	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 05:22	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:22	JPA	A
Trichloroethene	2.3		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:22	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:22	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/29/15 05:22	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:22	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 05:22	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260C			4/29/15 05:22	JPA	A
4-Bromofluorobenzene (S)	99.5		%	79 - 114	SW846 8260C			4/29/15 05:22	JPA	A
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260C			4/29/15 05:22	JPA	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C			4/29/15 05:22	JPA	A

METALS

Antimony, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Barium, Total	0.067		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Beryllium, Total	0.00051J	J	mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Chromium, Total	0.0060		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Cobalt, Total	0.0019J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Copper, Total	0.0062		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Iron, Total	4.3		mg/L	0.067	0.022	SW846 6010C	4/26/15	AAM	4/27/15 12:15	SRT	E1
Lead, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Manganese, Total	0.086		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 14:35	MNP	E3
Molybdenum, Total	0.010		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Nickel, Total	0.0055J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604002** Date Collected: 4/22/2015 10:20 Matrix: Water

Sample ID: **MRC-MW-87B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2
Vanadium, Total	0.0051		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:19	ZMC	E2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604003** Date Collected: 4/22/2015 12:15 Matrix: Water

Sample ID: **MRC-MW-91A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES											
1,4-Dioxane	4.1		ug/L	0.070	0.014	EPA 522	5/1/15	JEK	5/1/15 23:20	DHF	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	86.4		%	70 - 130		EPA 522	5/1/15	JEK	5/1/15 23:20	DHF	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604004** Date Collected: 4/22/2015 10:55 Matrix: Water

Sample ID: **MRC-MW-60A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	3.7J	J	ug/L	10.0	3.1	SW846 8260C		4/29/15 09:41	JPA	A
Benzene	0.72J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 09:41	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 09:41	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 09:41	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 09:41	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/29/15 09:41	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 09:41	JPA	A
Carbon Disulfide	0.29J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 09:41	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 09:41	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 09:41	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 09:41	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 09:41	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 09:41	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 09:41	JPA	A
Cyclohexane	1.7		ug/L	1.0	0.29	SW846 8260C		4/29/15 09:41	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 09:41	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 09:41	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 09:41	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 09:41	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 09:41	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 09:41	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 09:41	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 09:41	JPA	A
1,1-Dichloroethene	3.1		ug/L	1.0	0.29	SW846 8260C		4/29/15 09:41	JPA	A
cis-1,2-Dichloroethene	789		ug/L	20.0	6.4	SW846 8260C		4/30/15 07:25	JPA	A
trans-1,2-Dichloroethene	6.4		ug/L	1.0	0.26	SW846 8260C		4/29/15 09:41	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 09:41	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 09:41	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 09:41	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 09:41	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 09:41	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 09:41	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 09:41	JPA	A
Isopropylbenzene	0.95J	J	ug/L	1.0	0.22	SW846 8260C		4/29/15 09:41	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 09:41	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 09:41	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604004** Date Collected: 4/22/2015 10:55 Matrix: Water

Sample ID: **MRC-MW-60A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 09:41	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 09:41	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 09:41	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 09:41	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 09:41	JPA	A
Tetrachloroethene	11.0		ug/L	1.0	0.35	SW846 8260C			4/29/15 09:41	JPA	A
Toluene	0.72J	J	ug/L	1.0	0.23	SW846 8260C			4/29/15 09:41	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 09:41	JPA	A
1,2,4-Trichlorobenzene	0.95J	J	ug/L	2.0	0.82	SW846 8260C			4/29/15 09:41	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 09:41	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 09:41	JPA	A
Trichloroethene	741		ug/L	20.0	6.6	SW846 8260C			4/30/15 07:25	JPA	A
Trichlorofluoromethane	0.69J	J	ug/L	1.0	0.24	SW846 8260C			4/29/15 09:41	JPA	A
Vinyl Chloride	122		ug/L	1.0	0.30	SW846 8260C			4/29/15 09:41	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 09:41	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 09:41	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133		SW846 8260C			4/29/15 09:41	JPA	A
1,2-Dichloroethane-d4 (S)	103		%	62 - 133		SW846 8260C			4/30/15 07:25	JPA	A
4-Bromofluorobenzene (S)	90		%	79 - 114		SW846 8260C			4/30/15 07:25	JPA	A
4-Bromofluorobenzene (S)	97.2		%	79 - 114		SW846 8260C			4/29/15 09:41	JPA	A
Dibromofluoromethane (S)	104		%	78 - 116		SW846 8260C			4/29/15 09:41	JPA	A
Dibromofluoromethane (S)	97.4		%	78 - 116		SW846 8260C			4/30/15 07:25	JPA	A
Toluene-d8 (S)	101		%	76 - 127		SW846 8260C			4/29/15 09:41	JPA	A
Toluene-d8 (S)	97.5		%	76 - 127		SW846 8260C			4/30/15 07:25	JPA	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Barium, Total	0.059		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Beryllium, Total	0.00091J	J	mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Cobalt, Total	0.057		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Iron, Total	27.2		mg/L	0.067	0.022	SW846 6010C	4/26/15	AAM	4/27/15 12:18	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Manganese, Total	4.0		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2

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State Certifications: DE ID11, MAPA0102 , MDI28 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604004** Date Collected: 4/22/2015 10:55 Matrix: Water

Sample ID: **MRC-MW-60A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 14:39	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Nickel, Total	0.063		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:22	ZMC	D2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 17:56	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604005** Date Collected: 4/22/2015 09:35 Matrix: Water

Sample ID: **MRC-MW-60B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 05:39	JPA	A
Benzene	0.35J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 05:39	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:39	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:39	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 05:39	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/29/15 05:39	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 05:39	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 05:39	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:39	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 05:39	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 05:39	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:39	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 05:39	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:39	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:39	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 05:39	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:39	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 05:39	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 05:39	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:39	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:39	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:39	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:39	JPA	A
1,1-Dichloroethene	8.6		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:39	JPA	A
cis-1,2-Dichloroethene	170		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:39	JPA	A
trans-1,2-Dichloroethene	1.9		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:39	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 05:39	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:39	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:39	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 05:39	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 05:39	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:39	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 05:39	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 05:39	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 05:39	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 05:39	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604005** Date Collected: 4/22/2015 09:35 Matrix: Water

Sample ID: **MRC-MW-60B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:39	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 05:39	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 05:39	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:39	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 05:39	JPA	A
Tetrachloroethene	14.8		ug/L	1.0	0.35	SW846 8260C			4/29/15 05:39	JPA	A
Toluene	0.29J	J	ug/L	1.0	0.23	SW846 8260C			4/29/15 05:39	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 05:39	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/29/15 05:39	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 05:39	JPA	A
1,1,2-Trichloroethane	0.98J	J	ug/L	1.0	0.33	SW846 8260C			4/29/15 05:39	JPA	A
Trichloroethene	4070		ug/L	25.0	8.3	SW846 8260C			4/30/15 08:16	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:39	JPA	A
Vinyl Chloride	4.6		ug/L	1.0	0.30	SW846 8260C			4/29/15 05:39	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:39	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 05:39	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/30/15 08:16	JPA	A
1,2-Dichloroethane-d4 (S)	110		%	62 - 133		SW846 8260C			4/29/15 05:39	JPA	A
4-Bromofluorobenzene (S)	98		%	79 - 114		SW846 8260C			4/30/15 08:16	JPA	A
4-Bromofluorobenzene (S)	101		%	79 - 114		SW846 8260C			4/29/15 05:39	JPA	A
Dibromofluoromethane (S)	100		%	78 - 116		SW846 8260C			4/30/15 08:16	JPA	A
Dibromofluoromethane (S)	106		%	78 - 116		SW846 8260C			4/29/15 05:39	JPA	A
Toluene-d8 (S)	99.8		%	76 - 127		SW846 8260C			4/30/15 08:16	JPA	A
Toluene-d8 (S)	104		%	76 - 127		SW846 8260C			4/29/15 05:39	JPA	A
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			4/28/15 08:50	JSH	K
Ethene	ND		ug/L	2.4	0.40	RSK 175			4/28/15 08:50	JSH	K
Methane	54.9		ug/L	1.5	0.34	RSK 175			4/28/15 08:50	JSH	K
WET CHEMISTRY											
Alkalinity, Total	39		mg/L	5	0.8	S2320B-97			4/24/15 08:26	MBW	K
Ammonia-nitrogen, Total	1.02		mg/L	0.60	0.2	S4500NH3D	5/5/15	J1H	5/6/15 09:44	J1H	K
Chloride	40.6		mg/L	5.0	0.31	EPA 300.0			4/24/15 05:17	SSL	K
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			4/24/15 05:17	SSL	K
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			4/24/15 05:17	SSL	K
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			4/24/15 02:47	GMM	K

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604005** Date Collected: 4/22/2015 09:35 Matrix: Water

Sample ID: **MRC-MW-60B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	3.8J	J	mg/L	5.0	0.32	EPA 300.0			4/24/15 05:17	SSL	K
Total Dissolved Solids	82		mg/L	5	5	S2540C-11			4/26/15 17:05	NV	K
Total Organic Carbon-Dissolved	0.32J	J	mg/L	1.0	0.24	SW846 9060A			4/29/15 13:04	PAG	C
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Barium, Total	0.046		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Cobalt, Total	0.030		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Iron, Total	5.0		mg/L	0.067	0.022	SW846 6010C	4/26/15	AAM	4/27/15 12:21	SRT	G1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Manganese, Total	2.0		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 14:40	MNP	G3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Nickel, Total	0.061		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:26	ZMC	G2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			4/28/15 18:15	SUB	K

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604006** Date Collected: 4/22/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-81A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Arsenic, Total	0.0034		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 03:52	ZMC	A2
Barium, Total	0.17		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Beryllium, Total	0.0013		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Chromium, Total	0.00080J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Cobalt, Total	0.067		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Copper, Total	0.0025J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Iron, Total	76.8		mg/L	0.067	0.022	SW846 6010C	4/26/15	AAM	4/27/15 12:24	SRT	A1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Manganese, Total	6.4		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 14:41	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Nickel, Total	0.050		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Selenium, Total	0.0085		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 03:52	ZMC	A2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 03:49	ZMC	A2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604007** Date Collected: 4/22/2015 13:50 Matrix: Water

Sample ID: **MRC-MW-81B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 05:57	JPA	A
Benzene	4.6		ug/L	1.0	0.23	SW846 8260C		4/29/15 05:57	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:57	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 05:57	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 05:57	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/29/15 05:57	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 05:57	JPA	A
Carbon Disulfide	0.42J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 05:57	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:57	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 05:57	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 05:57	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:57	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 05:57	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:57	JPA	A
Cyclohexane	0.48J	J	ug/L	1.0	0.29	SW846 8260C		4/29/15 05:57	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 05:57	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 05:57	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 05:57	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 05:57	JPA	A
1,4-Dichlorobenzene	0.39J	J	ug/L	1.0	0.27	SW846 8260C		4/29/15 05:57	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 05:57	JPA	A
1,1-Dichloroethane	114	67	ug/L	1.0	0.28	SW846 8260C		4/29/15 05:57	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 05:57	JPA	A
1,1-Dichloroethene	480		ug/L	100	29.0	SW846 8260C		4/30/15 08:33	JPA	A
cis-1,2-Dichloroethene	10900		ug/L	100	32.0	SW846 8260C		4/30/15 08:33	JPA	A
trans-1,2-Dichloroethene	122	45	ug/L	1.0	0.26	SW846 8260C		4/29/15 05:57	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 05:57	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 05:57	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 05:57	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 05:57	JPA	A
Ethylbenzene	0.58J	J	ug/L	1.0	0.34	SW846 8260C		4/29/15 05:57	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 05:57	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 05:57	JPA	A
Isopropylbenzene	0.25J	J	ug/L	1.0	0.22	SW846 8260C		4/29/15 05:57	JPA	A
Methyl acetate	ND	1516	ug/L	2.0	0.32	SW846 8260C		4/29/15 05:57	JPA	A

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604007** Date Collected: 4/22/2015 13:50 Matrix: Water

Sample ID: **MRC-MW-81B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl cyclohexane	ND	1314	ug/L	1.0	0.30	SW846 8260C			4/29/15 05:57	JPA	A
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:57	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 05:57	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 05:57	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:57	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 05:57	JPA	A
Tetrachloroethene	0.45J	J	ug/L	1.0	0.35	SW846 8260C			4/29/15 05:57	JPA	A
Toluene	1.0		ug/L	1.0	0.23	SW846 8260C			4/29/15 05:57	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/29/15 05:57	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/29/15 05:57	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 05:57	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 05:57	JPA	A
Trichloroethene	3010		ug/L	100	33.0	SW846 8260C			4/30/15 08:33	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 05:57	JPA	A
Vinyl Chloride	147	1	ug/L	1.0	0.30	SW846 8260C			4/29/15 05:57	JPA	A
o-Xylene	4.0	12	ug/L	1.0	0.33	SW846 8260C			4/29/15 05:57	JPA	A
mp-Xylene	0.92J	J	ug/L	2.0	0.52	SW846 8260C			4/29/15 05:57	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133		SW846 8260C			4/29/15 05:57	JPA	A
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/30/15 08:33	JPA	A
4-Bromofluorobenzene (S)	90.9		%	79 - 114		SW846 8260C			4/30/15 08:33	JPA	A
4-Bromofluorobenzene (S)	97.1		%	79 - 114		SW846 8260C			4/29/15 05:57	JPA	A
Dibromofluoromethane (S)	103		%	78 - 116		SW846 8260C			4/30/15 08:33	JPA	A
Dibromofluoromethane (S)	103		%	78 - 116		SW846 8260C			4/29/15 05:57	JPA	A
Toluene-d8 (S)	96		%	76 - 127		SW846 8260C			4/30/15 08:33	JPA	A
Toluene-d8 (S)	99		%	76 - 127		SW846 8260C			4/29/15 05:57	JPA	A
LIGHT HYDROCARBON GASES											
Ethane	0.59J	J	ug/L	3.3	0.23	RSK 175			4/28/15 09:29	JSH	I
Ethene	5.8		ug/L	2.4	0.40	RSK 175			4/28/15 09:29	JSH	I
Methane	701		ug/L	1.5	0.34	RSK 175			4/28/15 09:29	JSH	I
WET CHEMISTRY											
Alkalinity, Total	211		mg/L	5	0.8	S2320B-97			4/24/15 08:38	MBW	F
Ammonia-nitrogen, Total	0.084J	J	mg/L	0.10	0.04	S4500NH3D	5/7/15	J1H	5/7/15 17:45	NJA	G
Chloride	120		mg/L	2.0	0.12	EPA 300.0			4/23/15 17:34	SSL	H
Nitrate-N	0.18J	J	mg/L	0.20	0.037	EPA 300.0			4/23/15 17:34	SSL	H
Nitrite-N	ND		mg/L	0.20	0.044	EPA 300.0			4/23/15 17:34	SSL	H

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604007** Date Collected: 4/22/2015 13:50 Matrix: Water

Sample ID: **MRC-MW-81B-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Orthophosphate	0.011J	J	mg/L	0.020	0.0025	EPA 365.3		4/24/15 02:47	GMM	H
Sulfate	1.6J	J	mg/L	2.0	0.13	EPA 300.0		4/23/15 17:34	SSL	H
Total Dissolved Solids	456		mg/L	5	5	S2540C-11		4/26/15 17:05	NV	H
Total Organic Carbon-Dissolved	18.1		mg/L	5.0	1.2	SW846 9060A		4/29/15 08:00	PAG	L
METALS										
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Barium, Total	0.48		mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Beryllium, Total	0.00039J	J	mg/L	0.0010	0.00030	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Chromium, Total	0.0031		mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Cobalt, Total	0.025		mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Copper, Total	0.0036J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Iron, Total	66.7		mg/L	0.067	0.022	SW846 6010C	4/26/15 AAM	4/27/15 12:27	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Manganese, Total	3.2		mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15 MNP	4/30/15 14:42	MNP	D3
Molybdenum, Total	0.0013J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Nickel, Total	0.026		mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2
Vanadium, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15 AAM	4/28/15 04:04	ZMC	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604008** Date Collected: 4/22/2015 15:36 Matrix: Water

Sample ID: **MRC-MW-116A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 03:59	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 03:59	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:59	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 03:59	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 03:59	JPA	A
Bromomethane	0.66J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 03:59	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 03:59	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 03:59	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:59	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 03:59	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 03:59	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:59	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 03:59	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:59	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:59	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 03:59	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 03:59	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 03:59	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 03:59	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 03:59	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:59	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 03:59	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:59	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:59	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:59	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 03:59	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 03:59	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:59	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:59	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 03:59	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 03:59	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 03:59	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 03:59	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 03:59	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 03:59	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 03:59	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066604 TMM021|112IC06247

Lab ID: **2066604008** Date Collected: 4/22/2015 15:36 Matrix: Water

Sample ID: **MRC-MW-116A-042215** Date Received: 4/22/2015 20:21

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 03:59	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 03:59	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 03:59	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 03:59	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 03:59	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 03:59	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 03:59	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 03:59	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 03:59	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 03:59	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 03:59	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 03:59	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 03:59	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 03:59	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 03:59	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 03:59	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260C			4/30/15 03:59	JPA	A
4-Bromofluorobenzene (S)	93.1		%	79 - 114	SW846 8260C			4/30/15 03:59	JPA	A
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260C			4/30/15 03:59	JPA	A
Toluene-d8 (S)	97.2		%	76 - 127	SW846 8260C			4/30/15 03:59	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1511437
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **2066604 004** | Sampling Site: 2066604 | Collected: 04/22/2015
Lab ID: 1511437001 | Media: 250 mL Nalgene | Received: 04/24/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1562 (HBN: 147840) | **Percent Solid:** NA
Analyzed: 04/28/2015 17:56 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Sample ID: **2066604 005** | Sampling Site: 2066604 | Collected: 04/22/2015
Lab ID: 1511437002 | Media: 250 mL Nalgene | Received: 04/24/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1562 (HBN: 147840) | **Percent Solid:** NA
Analyzed: 04/28/2015 18:15 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Comments

Quality Control: EPA 6850 - (HBN: 147840)

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect. The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 04/29/2015 11:04	/S/ Thomas T. McKay 04/29/2015 16:04

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-021

Sample Management

This report contains the results of the analysis of eight (8) ground water samples collected on April 22, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 22, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontract Data

Two (2) samples were subcontracted to ALS – Salt Lake City for the analysis of Perchlorate by Method USEPA 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Six (6) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2170306, bromomethane was detected at 0.52J µg/L; carbon disulfide was detected at 0.38J µg/L; 1,4-dichlorobenzene was detected at 0.27J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2170379 and 2170380, was prepared from project sample MRC-MW-81B-042215 (2066604007). Results for precision and accuracy were within control limits; except as follows:

- In 2170379, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene and o-xylene were recovered below the control limits; 1,1-dichloroethene and trichloroethene had no recovery; methyl acetate and methyl cyclohexane were recovered above the control limits.

- In 2170380, 1,1-dichloroethane, trans-1,2-dichloroethene and vinyl chloride were recovered below the control limits; 1,1-dichloroethene and trichloroethene had no recovery; cis-1,2-dichloroethene, methyl acetate and methyl cyclohexane were recovered above the control limits.

Internal Standards. All internal standard results met method criteria.

<u>1,4-Dioxane by Method 522</u>

Sample Handling. One (1) water sample was extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

<u>Light Hydrocarbon Gases by RSK-175</u>

Sample Handling. Two (2) water samples were submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2170110, was prepared from project sample MRC-MW-60B-042215 (2066604005). Target analytes were detected as follows:

- Methane was detected at 54.9 µg/L in the sample and at 59.4 µg/L in the duplicate sample. The %RPD was recovered at 7.8%.

<u>Total Metals by SW-846 Method 6020A</u>

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.00078 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was prepared on sample, 2066604006, in this deliverable group. The spike recoveries and associated RPDS were within method control limits with the exception of the following:

- Co was outside method control limits for one of the spike recoveries.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Five (5) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. Two (2) aqueous samples were analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The samples were distilled and analyzed within the 28-day holding time established for the method.

Calibration. Initial calibrations were properly established on the days of analysis, and a second source standard was analyzed throughout the analyses to verify the calibrations. The recoveries were within the QC limits.

Blank. Preparation blanks, identified as 2173012 and 2174296, were distilled and analyzed with the samples. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. Laboratory control samples, identified as 2173013 and 2174297, were distilled and analyzed with the samples. The recoveries were within QC limits.

Anions by EPA 300.0

Sample handling. Two (2) aqueous samples were analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The samples were run within method recommended holding time for each analyte.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limits.

Blanks. Initial and continuing blanks were analyzed with the samples. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2168430, 2168142 and SSL, were analyzed initially and every 20 samples. Recoveries were within the QC limits.

Dissolved Total Organic Carbon by SW-846 9060A

Sample handling. Two (2) aqueous samples were analyzed for dissolved total organic carbon by SW-846 Method 9060A. The samples were analyzed within the 28-day holding time established for the method.

Calibration. On the day of analysis, a four-point low curve calibration was properly established, and initial and continuing calibration standards were analyzed throughout the run. The recoveries were all within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Total organic carbon was not detected above the reporting limit in the blanks.

A dissolved TOC blank, identified as DISS. BLANK, was analyzed with the samples. Dissolved total organic carbon was not detected above the reporting limit in the blank.

Laboratory Control Samples. A dissolved TOC laboratory control sample, identified as 5.0 QC DISS., was analyzed with the samples. The recovery was within the QC limits.

Orthophosphate by EPA 365.3

Sample handling. Two (2) aqueous samples were analyzed for orthophosphate by EPA Method 365.3. The samples were analyzed within the hold time established for the method.

Calibration. An initial calibration was established. Initial and continuing calibration verification standards were analyzed on the day of analysis to verify the calibration. All recoveries were within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Orthophosphate was not detected above the reporting limit in the blanks.

Total Alkalinity by SM 2320B

Sample handling. Two (2) aqueous samples were analyzed for total alkalinity by Standard Method 2320B. The samples was analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the sample. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

Total Dissolved Solids by SM2540C

Sample handling. Two (2) aqueous samples were analyzed for total dissolved solids by Standard Method 2540C. The samples were analyzed within the 7-day holding time established for the method.

Blank. A preparation blank, identified as 2169216, was analyzed with the samples. Total dissolved solids were not detected above the reporting limit in the blank.

Laboratory Control Sample. A laboratory control sample, identified as 2169217, was analyzed with the samples. The recovery was within the QC limits.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/9/2015

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511256; 1511257; 1511258; 1211437; 1511439

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1562 (147840)

General Set Information: There were ten field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 444330) was less than 1/2 the CRDL. The recovery for the LCS (444331) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511256001. The percent recoveries were outside of performance limits. The relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 28APR15C-02/03/11/20.

Thomas Bosch — April 29, 2015
Thomas Bosch — Date

Friday, May 08, 2015 9:02:30 AM
Page 24 of 34

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER No. 128486 DM | PAG

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND C
112IC06247	MRC-GW 2015	Tony Aparnavage	301 529-3021	ACS
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
Walt Payne		Walt Payne	301 981-3914	
		CARRIER/WAYBILL NUMBER		**CITY, STATE**

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)										
										G	P	G	P	G	P					
										PRESERVATIVE USED										
										TYPE OF ANALYSIS										
										VOCs	Total metals	4-4 Dioxane	Perchlorate	RSK-175	Alkalinity	TOC	Cl, NO2, NO3, SO4, OPO4, TDS, SI	NH3	COMMENTS
1	4-22	—	TB-042215	TB	—	—	QC	G	3	X										
2		1020	MRC-MW-87B-042215	MW87B	—	—	GW		4	X	X									
3		1215	MRC-MW-91A-042215	MW91A	—	—			2			X								
4		1055	MRC MW-60A-042215	MW60A	—	—			5	X	X		X							
5		0935	MRC-MW-60B-042215	MW60B	—	—			5	X	X		X	X	X	X	X	X		
6		1210	MW-MW-91A-042215	MW91A	—	—			1		X									
7		1350	MRC-MW-81B-042215	MW81B	—	—			11	X	X			X	X	X	X	X		
8		1536	MRC-MW-116A-042215	MW116A	—	—			3	X										
															AC					
			* received for 60B: 6 HCl vials												4/23/15					
					• 3 P UNP		• 1 HNO_3								0804					
					• 1 P H_2SO_4		• 1 A H_2SO_4		(12 total)											

1. RELINQUISHED BY Walt Payne	DATE 4-22-15	TIME 1602	1. RECEIVED BY Jerome Carroll/ACS	DATE 4/22/15	TIME 1602
2. RELINQUISHED BY Jerome Carroll/ACS	DATE 4/22	TIME	2. RECEIVED BY	DATE 4/22	TIME 1655
3. RELINQUISHED BY	DATE 4/22	TIME 2021	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Page 13 of 15

1511437

W

Analytical Laboratory Services, Inc.

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

1514A7 14348/#1

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: | 1 of 1

ALSI Quote #:

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT [ ] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [x] -Y Debra.Musser@alsglobal.com

Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	Perchlorate (Method 6850)
2066604 004	4/22/15	1055	C	GW				X
2066604 005	4/22/15	0935	C	GW				X

ANALYSES/METHOD REQUESTED

Enter Number of Containers Per Sample or Field Results Below.

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?		X
(if present) Seals Intact?		
Received on Ice?	X	
COC/Labels Agree?	X	
Cont. in Good Cond.?	X	
Correct Containers?	X	
Correct Sample Volumes?	X	
Correct Preservation?	X	

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

Subcontract: ALS Salt Lake City

Level IV Package Needed

TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time)

Reviewed By (initials/date/time)

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	4/22/15	1633	2	4/24/15	9:30
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [x] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ] DOD [ ]

State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]

Reportable to PADEP? Yes [ ]

PWSID #

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type- ADR/SEDD

* G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2066604 TMM021|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2066604001	TB-042215	Water	4/22/2015 20:21	4/22/2015 20:21	Collected by Client
2066604002	MRC-MW-87B-042215	Water	4/22/2015 10:20	4/22/2015 20:21	Collected by Client
2066604003	MRC-MW-91A-042215	Water	4/22/2015 12:15	4/22/2015 20:21	Collected by Client
2066604004	MRC-MW-60A-042215	Water	4/22/2015 10:55	4/22/2015 20:21	Collected by Client
2066604005	MRC-MW-60B-042215	Water	4/22/2015 09:35	4/22/2015 20:21	Collected by Client
2066604006	MRC-MW-81A-042215	Water	4/22/2015 12:10	4/22/2015 20:21	Collected by Client
2066604007	MRC-MW-81B-042215	Water	4/22/2015 13:50	4/22/2015 20:21	Collected by Client
2066604008	MRC-MW-116A-042215	Water	4/22/2015 15:36	4/22/2015 20:21	Collected by Client

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-021

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170306(MB)	2170306	15042863.D	4/29/2015	03:05
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22
TB-042215	2066604001	15042866.D	4/29/2015	03:57
MRC-MW-87B-042215	2066604002	15042871.D	4/29/2015	05:22
MRC-MW-60B-042215	2066604005	15042872.D	4/29/2015	05:39
MRC-MW-81B-042215	2066604007	15042873.D	4/29/2015	05:57
MRC-MW-81B-04...MS	2170379	15042876.D	4/29/2015	06:48
MRC-MW-81B-0...MSD	2170380	15042877.D	4/29/2015	07:05
MRC-MW-60A-042215	2066604004	15042886.D	4/29/2015	09:41

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-021

Lab File ID: 15043000.D BFB Injection Date: 4/30/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	81.0
175	5.0 - 9.0% of mass 174	5.8 (7.2) 1
176	95.0 - 101.0% of mass 174	79.5 (98.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15043002.D	4/30/2015	01:48
2170933(MB)	2170933	15043005.D	4/30/2015	02:50
2170934(LCS)	2170934	15043006.D	4/30/2015	03:08
MRC-MW-116A-042215	2066604008	15043009.D	4/30/2015	03:59
MRC-MW-60A-042215-DL20	2066604004	15043021.D	4/30/2015	07:25
MRC-MW-60B-042215-DL25	2066604005	15043024.D	4/30/2015	08:16
MRC-MW-81B-042215-DL100	2066604007	15043025.D	4/30/2015	08:33

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	4255	17230	69245	181093	373290	Q
Acrolein	0.06134	0.05818	0.05714	0.05526	0.05541	A
Acrylonitrile	0.11165	0.10975	0.10872	0.10615	0.10825	A
Acetonitrile	4601	23170	99080	243328	505090	Q
tert-Amyl Ethylether	8902	47537	243154	733910	1737572	Q
tert-Amyl methyl ether	11023	68104	331594	971037	2246772	Q
tert-Amyl Alcohol	1381	7641	35422	104691	248932	Q
Benzene	1.41199	1.41103	1.39276	1.39004	1.40862	A
Benzyl Chloride	775	4550	26568	100911	280755	Q
Bromobenzene	0.91268	0.94823	0.96053	0.99503	0.98967	A
Bromochloromethane	4340	22669	93150	247457	515557	Q
Bromodichloromethane	0.42588	0.40877	0.42375	0.43815	0.45809	A
Bromoform *	2735	17010	81526	251546	596234	Q
Bromomethane	4381	20304	88467	256107	548222	Q
2-Butanone	3204	17802	100686	273094	597667	Q
tert.- Butyl Alcohol	0.02863	0.02525	0.02411	0.02416	0.02543	A
tert-Butylbenzene	3074	24506	138639	441815	965379	Q
n-Butylbenzene	2959	22793	140515	462837	1023838	Q
sec-Butylbenzene	14852	125341	746667	2304396	5035297	Q
Carbon Disulfide	19463	98143	421588	1190636	2607744	Q
Carbon Tetrachloride	0.40178	0.42921	0.41516	0.42646	0.44356	A
Chloroacetonitrile	745	4261	22353	64985	150107	Q
Chlorobenzene *	2.40348	2.38443	2.19384	2.26528	2.29257	A
1-Chlorobutane	7695	40902	176498	483120	1016759	Q
Chlorodibromomethane	5745	32047	151849	447063	1018117	Q
Chloroethane	7076	35341	134325	352961	726899	Q
2-Chloroethylvinyl ether	178	1255	8329	32069	109535	Q
Chloroform **	26254	92262	347218	902125	1877847	Q
1-Chlorohexane	5049	32802	180386	576242	1324500	Q
Chloromethane *	12268	54126	202083	523832	1120226	Q
Chloroprene	0.50055	0.46086	0.45177	0.47932	0.49232	A
3-Chloro-1-propene	9266	49037	200391	533766	1080832	Q
o-Chlorotoluene	14041	105154	576135	1737210	3836681	Q
p-Chlorotoluene	11628	94669	532169	1629351	3563192	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.40622	0.41886	0.45509	0.47937	0.49007	A
1,2-Dibromo-3-Chloropropane	936	4966	24886	73470	174252	Q
1,2-Dibromoethane	0.68419	0.61462	0.59821	0.62575	0.66274	A
Dibromomethane	0.21845	0.20856	0.20642	0.20335	0.20589	A
trans-1,4-Dichloro-2-butene	0.23097	0.20423	0.23413	0.23057	0.23962	A
1,2-Dichlorobenzene	1.76747	1.71612	1.73101	1.80582	1.80880	A
1,3-Dichlorobenzene	1.75139	1.87266	1.81287	1.88231	1.87190	A
1,4-Dichlorobenzene	2.05143	1.98951	1.88911	1.92502	1.90981	A
Dichlorodifluoromethane	12409	60875	234675	599383	1254361	Q
1,1-Dichloroethane *	14805	79061	319285	849010	1777124	Q
1,2-Dichloroethene, Total	21213	112259	451055	1224977	2591425	Q
1,2-Dichloroethane	11165	58493	242705	629181	1328465	Q
1,1-Dichloroethene **	11996	60953	244803	636090	1333858	Q
cis-1,2-Dichloroethene	0.45637	0.46135	0.42904	0.43981	0.45378	A
trans-1,2-Dichloroethene	11440	58891	231367	615454	1269464	Q
Dichlorofluoromethane	17071	88086	342937	895322	1856859	Q
1,1-Dichloro-2-Propanone	414	2714	14122	45079	100723	Q
2,2-Dichloropropane	0.37890	0.37353	0.35312	0.37484	0.39876	A
1,3-Dichloropropane	10307	57614	261990	731359	1600976	Q
1,2-Dichloropropane **	0.33412	0.34028	0.34402	0.34728	0.35511	A
1,1-Dichloropropene	0.40557	0.42815	0.44749	0.46578	0.47468	A
cis-1,3-Dichloropropene	6897	40887	214986	677067	1574649	Q
trans-1,3-Dichloropropene	5457	37603	211290	636980	1452634	Q
1,3-Dichloropropene, Total	12354	78490	426276	1314047	3027283	Q
Diisobutylene	34089	98471	366547	1028091	2188154	Q
Diisopropyl ether	23388	118429	473219	1316882	2842898	Q
1,4-Dioxane	1268	7271	39659	123213	274830	Q
Ethyl Acetate	0.25291	0.24232	0.25189	0.26267	0.27556	A
Ethyl ether	5122	25907	108421	288591	616986	Q
Ethyl Methacrylate	4623	30083	171068	549342	1287967	Q
Ethyl tert-butyl ether	0.77830	0.77171	0.77268	0.83007	0.88191	A
Ethylbenzene **	7638	50660	258658	738205	1595442	Q
Freon 113	7783	42237	162759	422787	868099	Q
Heptane	2843	19956	96976	294440	636399	Q

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SPCC Compounds (*) with required minimum RRF.
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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	3692	18782	85225	256816	546919	Q
Hexachloroethane	3247	20135	102383	317949	733297	Q
Hexane	14618	70724	279913	770956	1585731	Q
2-Hexanone	12071	75356	468071	1403573	3083914	Q
Iodomethane	377	1608	9504	60808	242612	Q
Isobutyl alcohol	2230	7901	36859	105220	245799	Q
Isopropyl Alcohol	2771	10229	41220	116341	251135	Q
Isopropylbenzene	15259	114086	668565	2139375	4812946	Q
p-Isopropyltoluene	2630	24420	159185	513113	1139653	Q
Methyl acetate	1654	7185	28971	72637	154489	Q
Methyl acrylate	0.23153	0.22724	0.24813	0.25893	0.27587	A
Methacrylonitrile	2535	14069	71612	185960	403107	Q
Methyl cyclohexane	1.06925	1.01726	1.04178	1.14275	1.17553	A
Methyl methacrylate	3497	17459	95253	302308	724319	Q
Methyl t-Butyl Ether	0.88912	0.82344	0.77866	0.77468	0.80454	A
4-Methyl-2-Pentanone(MIBK)	18381	120573	692265	2032522	4399659	Q
Methylene Chloride	17731	57732	205297	505211	1028327	Q
Naphthalene	7249	43933	303542	1242934	3038814	Q
Nitrobenzene	1922	9192	48178	174141	540453	Q
2-Nitropropane	4765	27822	152005	473592	1074012	Q
Octane	1440	11465	71102	241793	529959	Q
Pentachloroethane	0.69244	0.72287	0.67152	0.69239	0.68967	A
Pentane	6458	30565	117601	307218	617690	Q
n-Propanol	6904	32213	132136	330916	662618	Q
Propionitrile	0.04555	0.04383	0.04356	0.04302	0.04363	A
n-Propylbenzene	4066	32776	202726	619070	1357867	Q
Styrene	10182	73126	466501	1452823	3245469	Q
1,1,1,2-Tetrachloroethane	0.79859	0.76397	0.71145	0.75061	0.77985	A
1,1,2,2-Tetrachloroethane *	8018	47061	203453	551573	1155884	Q
Tetrachloroethene	6696	38022	161358	430317	898819	Q
Tetrahydrofuran	6900	40707	195770	555106	1236148	Q
Toluene **	12123	80663	417580	1193078	2596468	Q
Total Xylenes	21165	156136	858624	2641701	5823518	Q
1,2,3-Trichlorobenzene	4989	29884	175129	568713	1270386	Q

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CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	5598	32091	182495	625386	1451597	Q
1,1,1-Trichloroethane	0.51091	0.51580	0.49223	0.50227	0.50693	A
1,1,2-Trichloroethane	5797	33055	135958	365959	778240	Q
Trichloroethene	8753	44453	181459	494092	1046268	Q
Trichlorofluoromethane	16411	80251	310915	800728	1652122	Q
1,2,3-Trichloropropane	2155	14137	63818	171594	364322	Q
1,2,4-Trimethylbenzene	10991	96573	625043	1920098	4196140	Q
1,3,5-Trimethylbenzene	10816	96617	624885	1889506	4084862	Q
Vinyl Acetate	957	6167	32201	92858	207276	Q
Vinyl Chloride **	10022	49709	199682	549983	1172233	Q
o-Xylene	6366	44920	247884	832611	1889306	Q
mp-Xylene	14799	111216	610740	1809090	3934212	Q
4-Bromofluorobenzene	5623	30742	149439	455076	1015672	Q
Dibromofluoromethane	10369	43325	159829	423424	891026	Q
1,2-Dichloroethane-d4	14862	51198	189761	477803	982788	Q
Toluene-d8	2.85249	2.22859	2.19395	2.37576	2.44519	A

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

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SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.2	100.0	Q
Acrolein	0.0581	0.0524			-9.9	100.0	A
Acrylonitrile	0.1086	0.1034			-4.8	100.0	A
Acetonitrile	250		247		-1.1	100.0	Q
tert-Amyl Ethylether	50.0000		43.2377		-13.5	100.0	Q
tert-Amyl methyl ether	50.0000		43.0118		-14.0	100.0	Q
tert-Amyl Alcohol	250		207		-17.3	100.0	Q
Benzene	1.4258	1.3455			-5.6	100.0	A
Benzyl Chloride	50.0000		38.9773		-22.0	100.0	Q
Bromobenzene	0.9609	0.9127			-5.0	100.0	A
Bromochloromethane	50.0000		48.8843		-2.2	100.0	Q
Bromodichloromethane	0.4399	0.4168			-5.3	100.0	A
Bromoform	50.0000		41.9449	0.100	-16.1	100.0	Q
Bromomethane	50.0000		59.3716		18.7	100.0	Q
2-Butanone	250		195		-22.0	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0221			-13.3	100.0	A
tert-Butylbenzene	50.0000		45.1641		-9.7	100.0	Q
n-Butylbenzene	50.0000		44.1110		-11.8	100.0	Q
sec-Butylbenzene	50.0000		45.2798		-9.4	100.0	Q
Carbon Disulfide	50.0000		46.4227		-7.2	100.0	Q
Carbon Tetrachloride	0.4297	0.4103			-4.5	100.0	A
Chloroacetonitrile	250		212		-15.1	100.0	Q
Chlorobenzene	2.3877	2.0948		0.300	-12.3	100.0	A
1-Chlorobutane	50.0000		47.2735		-5.5	100.0	Q
Chlorodibromomethane	50.0000		43.8207		-12.4	100.0	Q
Chloroethane	50.0000		50.8149		1.6	100.0	Q
2-Chloroethylvinyl ether	50.0000		36.5947		-26.8	100.0	Q
Chloroform	50.0000		49.5065		-1.0	20.0	Q
1-Chlorohexane	50.0000		43.5800		-12.8	100.0	Q
Chloromethane	50.0000		54.8450	0.100	9.7	100.0	Q
Chloroprene	0.4876	0.4827			-1.0	100.0	A
3-Chloro-1-propene	50.0000		45.8975		-8.2	100.0	Q
o-Chlorotoluene	50.0000		45.5015		-9.0	100.0	Q
p-Chlorotoluene	50.0000		45.2425		-9.5	100.0	Q
Cyclohexane	0.4544	0.4665			2.7	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.5241		-17.0	100.0	Q
1,2-Dibromoethane	0.6562	0.5552			-15.4	100.0	A
Dibromomethane	0.2114	0.1903			-10.0	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.1969			-13.7	100.0	A
1,2-Dichlorobenzene	1.7893	1.6318			-8.8	100.0	A
1,3-Dichlorobenzene	1.8566	1.7159			-7.6	100.0	A
1,4-Dichlorobenzene	1.9931	1.7805			-10.7	100.0	A
Dichlorodifluoromethane	50.0000		52.9865		6.0	100.0	Q
1,1-Dichloroethane	50.0000		50.7649	0.100	1.5	100.0	Q
1,2-Dichloroethene, Total	100		96.7581		-3.2	100.0	Q
1,2-Dichloroethane	50.0000		47.6995		-4.6	100.0	Q
1,1-Dichloroethene	50.0000		48.6981		-2.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.4385			-5.5	100.0	A
trans-1,2-Dichloroethene	50.0000		49.5179		-1.0	100.0	Q
Dichlorofluoromethane	50.0000		48.7129		-2.6	100.0	Q
1,1-Dichloro-2-Propanone	250		214		-14.2	100.0	Q
2,2-Dichloropropane	0.3930	0.3391			-13.7	100.0	A
1,3-Dichloropropane	50.0000		44.5618		-10.9	100.0	Q
1,2-Dichloropropane	0.3530	0.3317			-6.0	20.0	A
1,1-Dichloropropene	0.4527	0.4426			-2.2	100.0	A
cis-1,3-Dichloropropene	50.0000		42.8517		-14.3	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.3453		-13.3	100.0	Q
1,3-Dichloropropene, Total	100		86.1970		-13.8	100.0	Q
Diisobutylene	50.0000		45.7096		-8.6	100.0	Q
Diisopropyl ether	50.0000		48.8422		-2.3	100.0	Q
1,4-Dioxane	1250		1047		-16.3	100.0	Q
Ethyl Acetate	0.2675	0.2401			-10.2	100.0	A
Ethyl ether	50.0000		46.3510		-7.3	100.0	Q
Ethyl Methacrylate	50.0000		41.4696		-17.1	100.0	Q
Ethyl tert-butyl ether	0.8344	0.7905			-5.3	100.0	A
Ethylbenzene	50.0000		45.7960		-8.4	20.0	Q
Freon 113	50.0000		47.7930		-4.4	100.0	Q
Heptane	50.0000		41.9493		-16.1	100.0	Q
Hexachlorobutadiene	50.0000		43.6456		-12.7	100.0	Q
Hexachloroethane	50.0000		44.2898		-11.4	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		46.3563		-7.3	100.0	Q
2-Hexanone	250		210		-16.1	100.0	Q
Iodomethane	50.0000		64.6925		29.4	100.0	Q
Isobutyl alcohol	500		416		-16.8	100.0	Q
Isopropyl Alcohol	250		227		-9.3	100.0	Q
Isopropylbenzene	50.0000		44.5488		-10.9	100.0	Q
p-Isopropyltoluene	50.0000		44.3574		-11.3	100.0	Q
Methyl acetate	50.0000		47.9380		-4.1	100.0	Q
Methyl acrylate	0.2529	0.2324			-8.1	100.0	A
Methacrylonitrile	50.0000		46.5053		-7.0	100.0	Q
Methyl cyclohexane	1.1020	1.0155			-7.8	100.0	A
Methyl methacrylate	50.0000		42.5022		-15.0	100.0	Q
Methyl t-Butyl Ether	0.8449	0.7340			-13.1	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		214		-14.3	100.0	Q
Methylene Chloride	50.0000		50.9288		1.9	100.0	Q
Naphthalene	50.0000		38.4048		-23.2	100.0	Q
Nitrobenzene	500		372		-25.7	100.0	Q
2-Nitropropane	250		225		-10.0	100.0	Q
Octane	50.0000		39.9334		-20.1	100.0	Q
Pentachloroethane	0.6997	0.6337			-9.4	100.0	A
Pentane	50.0000		45.4640		-9.1	100.0	Q
n-Propanol	500		515		3.1	100.0	Q
Propionitrile	0.0436	0.0401			-8.0	100.0	A
n-Propylbenzene	50.0000		45.6385		-8.7	100.0	Q
Styrene	50.0000		45.0324		-9.9	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6929			-14.0	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.2088	0.300	-11.6	100.0	Q
Tetrachloroethene	50.0000		46.5844		-6.8	100.0	Q
Tetrahydrofuran	250		219		-12.2	100.0	Q
Toluene	50.0000		45.2579		-9.5	20.0	Q
Total Xylenes	150		134		-10.9	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.5426		-16.9	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.4271		-19.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4758			-7.7	100.0	A
1,1,2-Trichloroethane	50.0000		45.5646		-8.9	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-021

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		47.0150		-6.0	100.0	Q
Trichlorofluoromethane	50.0000		50.1777		0.4	100.0	Q
1,2,3-Trichloropropane	50.0000		44.2524		-11.5	100.0	Q
1,2,4-Trimethylbenzene	50.0000		45.2673		-9.5	100.0	Q
1,3,5-Trimethylbenzene	50.0000		45.7632		-8.5	100.0	Q
Vinyl Acetate	50.0000		46.1661		-7.7	100.0	Q
Vinyl Chloride	50.0000		49.0546		-1.9	20.0	Q
o-Xylene	50.0000		42.7290		-14.5	100.0	L
mp-Xylene	100		90.9349		-9.1	100.0	Q
4-Bromofluorobenzene	50.0000		47.6456		-4.7	100.0	Q
Dibromofluoromethane	50.0000		49.2453		-1.5	100.0	Q
1,2-Dichloroethane-d4	50.0000		48.2810		-3.4	100.0	Q
Toluene-d8	2.4192	2.2464			-7.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170306

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-021

Lab File ID: 15042863.D Lab Sample ID: 2170306

Date Analyzed: 4/29/2015 Time Analyzed: 03:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170307(LCS)	2170307	15042864.D	03:22
TB-042215	2066604001	15042866.D	03:57
MRC-MW-87B-042215	2066604002	15042871.D	05:22
MRC-MW-60B-042215	2066604005	15042872.D	05:39
MRC-MW-81B-042215	2066604007	15042873.D	05:57
MRC-MW-81B-04...MS	2170379	15042876.D	06:48
MRC-MW-81B-0...MSD	2170380	15042877.D	07:05
MRC-MW-60A-042215	2066604004	15042886.D	09:41

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.52	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.38	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.27	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170933

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-021

Lab File ID: 15043005.D Lab Sample ID: 2170933

Date Analyzed: 4/30/2015 Time Analyzed: 02:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170934(LCS)	2170934	15043006.D	03:08
MRC-MW-116A-042215	2066604008	15043009.D	03:59
MRC-MW-60A-042215-DL2	2066604004	15043021.D	07:25
MRC-MW-60B-042215-DL2	2066604005	15043024.D	08:16
MRC-MW-81B-042215-DL1	2066604007	15043025.D	08:33

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-021

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2170306(MB)	97.6	98.9	102	101	0
02	2170307(LCS)	96.5	94.4	94.2	91.3	0
03	TB-042215	98.4	100	105	102	0
04	MRC-MW-87B-042215	99.5	104	109	102	0
05	MRC-MW-60B-042215	101	106	110	104	0
06	MRC-MW-81B-042215	97.1	103	105	99.0	0
07	MRC-MW-81B-04...MS	94.7	96.9	94.2	91.3	0
08	MRC-MW-81B-0...MSD	95.0	94.9	90.8	91.1	0
09	MRC-MW-60A-042215	97.2	104	107	101	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-021

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
10	2170933(MB)	89.5	101	106	97.2	0
11	2170934(LCS)	90.2	93.0	94.1	87.5	0
12	MRC-MW-116A-042215	93.1	102	109	97.2	0
13	MRC-MW-60A-042215-DL20	90.0	97.4	103	97.5	0
14	MRC-MW-60B-042215-DL25	98.0	100	108	99.8	0
15	MRC-MW-81B-042215-DL100	90.9	103	108	96.0	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.9	99.9	(40-151)
Benzene	20.0		19.2	96.2	(80-124)
Bromochloromethane	20.0		19.1	95.7	(73-117)
Bromodichloromethane	20.0		18.4	92	(79-126)
Bromoform	20.0		16.1	80.6	(70-123)
Bromomethane	20.0		23.0	115	(45-148)
2-Butanone	100		88.2	88.2	(50-152)
Carbon Disulfide	20.0		16.2	81.1	(57-131)
Carbon Tetrachloride	20.0		18.9	94.3	(62-132)
Chlorobenzene	20.0		18.1	90.4	(85-117)
Chlorodibromomethane	20.0		17.1	85.6	(77-122)
Chloroethane	20.0		18.8	94.2	(51-142)
Chloroform	20.0		19.9	99.7	(78-122)
Chloromethane	20.0		23.4	117	(38-156)
Cyclohexane	20.0		19.9	99.3	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.2	81.2	(59-133)
1,2-Dibromoethane	20.0		17.4	87.1	(80-124)
1,2-Dichlorobenzene	20.0		18.1	90.5	(82-118)
1,3-Dichlorobenzene	20.0		19.0	95	(81-118)
1,4-Dichlorobenzene	20.0		18.6	92.9	(81-116)
Dichlorodifluoromethane	20.0		20.0	99.9	(17-166)
1,1-Dichloroethane	20.0		19.8	99	(78-124)
1,2-Dichloroethane	20.0		19.8	99.1	(70-133)
1,1-Dichloroethene	20.0		18.8	94.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.3	91.5	(78-125)
trans-1,2-Dichloroethen	20.0		20.6	103	(71-122)
1,2-Dichloropropane	20.0		18.8	94	(81-127)
cis-1,3-Dichloropropene	20.0		16.6	83.1	(81-121)
trans-1,3-Dichloroprope	20.0		17.1	85.7	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		390	78	(1-280)
Ethylbenzene	20.0		17.8	89.2	(80-124)
Freon 113	20.0		19.5	97.5	(50-130)
2-Hexanone	100		79.9	79.9	(65-154)
Isopropylbenzene	20.0		16.1	80.4	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.2	90.9	(70-130)
Methyl t-Butyl Ether	20.0		17.5	87.7	(69-115)
4-Methyl-2-Pentanone(MI	100		81.9	81.9	(71-146)
Methylene Chloride	20.0		20.6	103	(76-121)
Styrene	20.0		17.0	85	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.9	94.5	(74-135)
Tetrachloroethene	20.0		19.3	96.3	(72-124)
Toluene	20.0		18.3	91.4	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.9	69.5	(67-123)
1,1,1-Trichloroethane	20.0		18.9	94.3	(66-130)
1,1,2-Trichloroethane	20.0		19.1	95.7	(82-126)
Trichloroethene	20.0		19.3	96.7	(77-124)
Trichlorofluoromethane	20.0		19.4	96.8	(38-123)
Vinyl Chloride	20.0		19.0	94.8	(27-138)
o-Xylene	20.0		16.1	80.4	(79-124)
mp-Xylene	40.0		34.7	86.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-021

Matrix Spike - Sample No: MRC-MW-81B-04...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC	
Acetone	100	0	95.4	95.4	(40-151)	
Benzene	20.0	4.6	24.8	101	(80-124)	
Bromochloromethane	20.0	0	18.6	93	(73-117)	
Bromodichloromethane	20.0	0	20.6	103	(79-126)	
Bromoform	20.0	0	17.3	86.5	(70-123)	
Bromomethane	20.0	0	20.2	101	(45-148)	
2-Butanone	100	0	93.5	93.5	(50-152)	
Carbon Disulfide	20.0	0.42	18.2	89	(57-131)	
Carbon Tetrachloride	20.0	0	21.4	107	(62-132)	
Chlorobenzene	20.0	0	18.6	93.1	(85-117)	
Chlorodibromomethane	20.0	0	18.0	89.9	(77-122)	
Chloroethane	20.0	0	24.0	120	(51-142)	
Chloroform	20.0	0	21.2	106	(78-122)	
Chloromethane	20.0	0	24.1	121	(38-156)	
Cyclohexane	20.0	0.48	23.0	112	(66-130)	
1,2-Dibromo-3-chloropropane	20.0	0	17.8	89.1	(59-133)	
1,2-Dibromoethane	20.0	0	18.5	92.5	(80-124)	
1,2-Dichlorobenzene	20.0	0	18.8	94	(82-118)	
1,3-Dichlorobenzene	20.0	0	19.6	97.8	(81-118)	
1,4-Dichlorobenzene	20.0	0.39	19.2	94.1	(81-116)	
Dichlorodifluoromethane	20.0	0	20.7	103	(17-166)	
1,1-Dichloroethane	20.0	114	126	59.4*	(78-124)	*
1,2-Dichloroethane	20.0	0	21.0	105	(70-133)	
1,1-Dichloroethene	20.0	0	0	0.0*	(63-128)	
cis-1,2-Dichloroethene	20.0	2570	2500	-350.0	(78-125)	
trans-1,2-Dichloroethene	20.0	122	83.2	-194*	(71-122)	*
1,2-Dichloropropane	20.0	0	20.0	100	(81-127)	
cis-1,3-Dichloropropene	20.0	0	17.4	87.2	(81-121)	

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

* - result > 4 x spike

RPD: 0 out of 0 outside limits

Spike Recovery: 8 out of 52 outside limits

Comments: _____

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-021

Matrix Spike - Sample No: MRC-MW-81B-04...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
trans-1,3-Dichloropropene	20.0	0	17.8	89	(78-126)
1,4-Dioxane	500	0	410	81.9	(1-280)
Ethylbenzene	20.0	0.58	19.4	93.9	(80-124)
Freon 113	20.0	0	21.3	107	(50-130)
2-Hexanone	100	0	84.8	84.8	(65-154)
Isopropylbenzene	20.0	0.25	17.8	87.9	(73-129)
Methyl acetate	20.0	0	30.4	152*	(70-130)
Methyl cyclohexane	20.0	0	51.8	259*	(70-130)
Methyl t-Butyl Ether	20.0	0	17.7	88.4	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	0	85.5	85.5	(71-146)
Methylene Chloride	20.0	0	20.3	101	(76-121)
Styrene	20.0	0	17.9	89.5	(79-123)
1,1,2,2-Tetrachloroethane	20.0	0	19.3	96.4	(74-135)
Tetrachloroethene	20.0	0.45	19.7	96.3	(72-124)
Toluene	20.0	1	20.0	94.7	(80-125)
1,2,3-Trichlorobenzene	20.0	0	15.9	79.7	(61-126)
1,2,4-Trichlorobenzene	20.0	0	16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0	0	20.4	102	(66-130)
1,1,2-Trichloroethane	20.0	0	23.4	117	(82-126)
Trichloroethene	20.0	0	0	0.0*	(77-124)
Trichlorofluoromethane	20.0	0	16.8	84	(38-123)
Vinyl Chloride	20.0	147	161	68.5	(27-138)
o-Xylene	20.0	4	19.6	78.4*	(79-124)
mp-Xylene	40.0	0.92	38.1	92.9	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 8 out of 52 outside limits

Comments: _____

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-021

Matrix Spike - Sample No: MRC-MW-81B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC	
Acetone	100	89.9	89.9	6	40	(40-151)	
Benzene	20.0	23.6	94.7	5	26	(80-124)	
Bromochloromethane	20.0	17.9	89.4	4	19	(73-117)	
Bromodichloromethane	20.0	18.9	94.4	9	16	(79-126)	
Bromoform	20.0	16.7	83.4	4	16	(70-123)	
Bromomethane	20.0	18.0	89.8	12	26	(45-148)	
2-Butanone	100	94.6	94.6	1	16	(50-152)	
Carbon Disulfide	20.0	16.9	82.4	8	28	(57-131)	
Carbon Tetrachloride	20.0	19.9	99.6	7	17	(62-132)	
Chlorobenzene	20.0	18.3	91.6	2	15	(85-117)	
Chlorodibromomethane	20.0	17.8	89	1	15	(77-122)	
Chloroethane	20.0	22.3	111	7	24	(51-142)	
Chloroform	20.0	19.7	98.5	7	16	(78-122)	
Chloromethane	20.0	22.8	114	5	27	(38-156)	
Cyclohexane	20.0	21.3	104	7	20	(66-130)	
1,2-Dibromo-3-chloropropane	20.0	17.2	86.2	3	26	(59-133)	
1,2-Dibromoethane	20.0	18.4	91.8	1	19	(80-124)	
1,2-Dichlorobenzene	20.0	18.3	91.3	3	15	(82-118)	
1,3-Dichlorobenzene	20.0	19.1	95.4	3	16	(81-118)	
1,4-Dichlorobenzene	20.0	18.7	91.7	3	15	(81-116)	
Dichlorodifluoromethane	20.0	18.5	92.3	11	24	(17-166)	
1,1-Dichloroethane	20.0	120	28.4*	5	15	(78-124)	*
1,2-Dichloroethane	20.0	18.8	94	11	19	(70-133)	
1,1-Dichloroethene	20.0	0	0.0*	0	21	(63-128)	
cis-1,2-Dichloroethene	20.0	2210	11050*	12	21	(78-125)	*
trans-1,2-Dichloroethene	20.0	69.5	-262*	18	22	(71-122)	*
1,2-Dichloropropane	20.0	18.9	94.6	6	15	(81-127)	
cis-1,3-Dichloropropene	20.0	17.5	87.3	0	16	(81-121)	

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

* - result > 4 x spike

RPD: 0 out of 52 outside limits

Spike Recovery: 8 out of 52 outside limits

Comments: _____

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-021

Matrix Spike - Sample No: MRC-MW-81B-0...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
trans-1,3-Dichloropropene	20.0	17.8	89.2	0	18	(78-126)
1,4-Dioxane	500	402	80.3	2	40	(1-280)
Ethylbenzene	20.0	19.2	92.9	1	19	(80-124)
Freon 113	20.0	18.5	92.6	14	26	(50-130)
2-Hexanone	100	88.0	88	4	17	(65-154)
Isopropylbenzene	20.0	17.7	87.4	1	18	(73-129)
Methyl acetate	20.0	29.1	146*	4	18	(70-130)
Methyl cyclohexane	20.0	50.1	250*	3	18	(70-130)
Methyl t-Butyl Ether	20.0	17.0	85.2	4	20	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	86.6	86.6	1	16	(71-146)
Methylene Chloride	20.0	18.0	90.2	12	17	(76-121)
Styrene	20.0	17.8	88.9	1	16	(79-123)
1,1,2,2-Tetrachloroethane	20.0	19.0	95.1	1	16	(74-135)
Tetrachloroethene	20.0	19.1	93.5	3	38	(72-124)
Toluene	20.0	19.4	92.1	3	20	(80-125)
1,2,3-Trichlorobenzene	20.0	16.2	81.1	2	36	(61-126)
1,2,4-Trichlorobenzene	20.0	16.4	82.1	3	22	(67-123)
1,1,1-Trichloroethane	20.0	19.4	97.1	5	20	(66-130)
1,1,2-Trichloroethane	20.0	23.1	115	1	15	(82-126)
Trichloroethene	20.0	0	0.0*	0	18	(77-124)
Trichlorofluoromethane	20.0	15.6	78.1	7	23	(38-123)
Vinyl Chloride	20.0	145	-9.3*	10	40	(27-138) *
o-Xylene	20.0	19.8	79	1	19	(79-124)
mp-Xylene	40.0	37.7	91.9	1	21	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

* - result > 4 x spike

RPD: 0 out of 52 outside limits

Spike Recovery: 8 out of 52 outside limits

Comments: _____

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170306(MB)	281749	5.912	230024	7.686	712696	3.910
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910
TB-042215	263946	5.912	213187	7.686	672847	3.910
MRC-MW-87B-042215	244949	5.913	190716	7.686	626420	3.910
MRC-MW-60B-042215	256432	5.912	198679	7.686	624666	3.910
MRC-MW-81B-042215	280624	5.912	227246	7.686	677577	3.910
MRC-MW-81B-04...M	358721	5.913	319613	7.686	753840	3.910
MRC-MW-81B-0...MS	366770	5.912	327082	7.686	840307	3.910
MRC-MW-60A-042215	252000	5.913	202269	7.686	629096	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-021

Lab File ID: 15043002.D Date Analyzed: 4/30/2015

Instrument ID: ms15.i Time Analyzed: 01:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	377428	5.913	347722	7.686	793589	3.910
UPPER LIMIT	754856	6.413	695444	8.186	1587178	4.410
LOWER LIMIT	188714	5.413	173861	7.186	396795	3.410
SAMPLE NO.						
1800	377428	5.913	347722	7.686	793589	3.910
2170933(MB)	241882	5.913	192305	7.686	624719	3.910
2170934(LCS)	356190	5.913	320195	7.686	761046	3.910
MRC-MW-116A-04221	234422	5.913	184973	7.686	595021	3.910
MRC-MW-60A-042215	264199	5.913	213494	7.686	665951	3.910
MRC-MW-60B-042215	246058	5.913	184712	7.686	622694	3.910
MRC-MW-81B-042215	250489	5.913	192790	7.686	616652	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Semivolatile Organics by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/01/15	1840	8.36			
02	2172032	2172032	05/01/15	1920	8.36			
03	2172033LCSLO	2172033	05/01/15	2042	8.36			
04	MRC-MW-91A-0	2066604003	05/01/15	2320	8.36			
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: MS12 Calibration Date: 05/01/15 Time: 1840

Lab File ID: 12050101 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.09e-003	3.5e-003	1.0918383	0.00001	16.86	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6242356	0.6242356	0.00001	-12.33	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172032

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Lab File ID: 12050102A Lab Sample ID: 2172032

Instrument ID: MS12 Date Extracted: 05/01/15

Matrix: (soil/water) WATER Date Analyzed: 05/01/15

Level:(low/med) LOW Time Analyzed: 1920

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172033LCSLO	2172033	12050103	05/01/15
02	MRC-MW-91A-0	2066604003	12050109	05/01/15
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
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28				
29				
30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2172032

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Matrix: (soil/water) WATER Lab Sample ID: 2172032

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050102A

Level: (low/med) LOW Date Received: 05/01/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/01/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/01/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172032	83								0
02	2172033LCSLO	86								0
03	MRC-MW-91A-0	86								0
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Matrix Spike - Sample No.: 2172033LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0599917	86	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/01/15

Lab File ID (Standard): 12050101 Time Analyzed: 1840

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	47261	6.36				
	UPPER LIMIT	61439	6.86				
	LOWER LIMIT	33083	5.86				
	SAMPLE NO.						
01	2172032	51149	6.36				
02	2172033LCSLO	51470	6.36				
03	MRC-MW-91A-0	50064	6.36				
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	56413	6.33				
UPPER LIMIT	73337	6.83				
LOWER LIMIT	39489	5.83				
SAMPLE NO.						
01 2ND-0.1	51755	6.36				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

Light Hydrocarbon Gases by Method RSK-175 Summary Forms

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
10						
11						
12						
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29						
30						
31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	04/28/15	0642		
02	LEVEL5	LEVEL5	04/28/15	0657		
03	2169990	2169990	04/28/15	0731		
04	MRC-MW-60B-0	2066604005	04/28/15	0850		
05	MRC-MW-60B-0	2170110	04/28/15	0915		
06	MRC-MW-81B-0	2066604007	04/28/15	0929		
07	LEVEL5	LEVEL5	04/28/15	1143		
08						
09						
10						
11						
12						
13						
14						
15						
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29						
30						
31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RF10: MD2A009 RF50: MD2A002 RF100: MD2A003
RF500: MD2A004 RF1000: MD2A005 RF10000: MD2A006

COMPOUND	RF10	RF50	RF100	RF500	RF1000	RF10000
METHANE	32.711	28.296	25.507	24.980	23.513	23.330
ETHENE	50.865	48.801	48.238	46.332	43.516	
ETHANE	52.610	49.609	48.713	46.893	44.002	
PROPANE	74.249	71.266	71.078	69.260	65.151	65.296
N-BUTANE	100.200	92.620	91.190	91.852	86.759	82.379
ISO-BUTANE	90.200	89.460	88.960	90.476	85.102	82.421

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RT1: MD2A009 RT2: MD2A002 RT3: MD2A003
RT4: MD2A004 RT5: MD2A005 RT6: MD2A006

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
METHANE	0.500	0.480	0.490	0.490	0.490	0.490
ETHENE	1.900	1.890	1.890	1.890	1.890	
ETHANE	2.370	2.360	2.360	2.360	2.360	
PROPANE	4.480	4.470	4.470	4.470	4.470	4.460
N-BUTANE	6.700	6.700	6.700	6.690	6.690	6.680
ISO-BUTANE	6.190	6.170	6.170	6.170	6.160	6.160

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RT7: MD2A007

COMPOUND	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
METHANE	0.490	0.490	0.457	0.536
ETHENE		1.892	1.751	2.056
ETHANE		2.362	2.180	2.560
PROPANE	4.430	4.464	4.119	4.835
N-BUTANE	6.610	6.681	6.164	7.236
ISO-BUTANE	6.080	6.157	5.692	6.682

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 0642

Lab File ID: MDSA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.700582	0.01	-6.67	15.00	AVRG	
ETHENE	47.550000	47.925787	0.01	0.79	15.00	AVRG	
ETHANE	48.365000	47.942494	0.01	-0.87	15.00	AVRG	
PROPANE	67.640000	70.520899	0.01	4.26	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 0642

Lab File ID: MDSA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.700582	0.01	-6.67	15.00	AVRG	
ETHENE	47.550000	47.925787	0.01	0.79	15.00	AVRG	
ETHANE	48.365000	47.942494	0.01	-0.87	15.00	AVRG	
PROPANE	67.640000	70.520899	0.01	4.26	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 0657

Lab File ID: MDSA002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	24.341363	0.01	-4.15	15.00	AVRG
ETHENE	47.550000	45.720703	0.01	-3.85	15.00	AVRG
ETHANE	48.365000	47.582178	0.01	-1.62	15.00	AVRG
PROPANE	67.640000	70.457058	0.01	4.16	15.00	AVRG
N-BUTANE	88.662000	93.194000	0.01	5.11	15.00	AVRG
ISO-BUTANE	85.930000	92.818000	0.01	8.02	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Instrument ID: GC03 Calibration Date: 04/28/15 Time: 1143

Lab File ID: MDSA013 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	22.305484	0.01	-12.16	15.00	AVRG
ETHENE	47.550000	42.037109	0.01	-11.59	15.00	AVRG
ETHANE	48.365000	43.764356	0.01	-9.51	15.00	AVRG
PROPANE	67.640000	65.169793	0.01	-3.65	15.00	AVRG
N-BUTANE	88.662000	87.204000	0.01	-1.64	15.00	AVRG
ISO-BUTANE	85.930000	85.842000	0.01	-0.10	15.00	AVRG

FORM VII VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2169990

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Lab File ID: MDSA003 Lab Sample ID: 2169990

Date Analyzed: 04/28/15 Time Analyzed: 0731

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-60B-0	2066604005	MDSA007	0850
02	MRC-MW-60B-0	2170110	MDSA008	0915
03	MRC-MW-81B-0	2066604007	MDSA009	0929
04				
05				
06				
07				
08				
09				
10				
11				
12				
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30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2169990

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM021

Matrix: (soil/water) WATER Lab Sample ID: 2169990

Sample wt/vol: _____ (g/mL) ML Lab File ID: MDSA003

Level: (low/med) LOW Date Received: 04/28/15

% Moisture: not dec. _____ Date Analyzed: 04/28/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM I VOA

Total Metals by 6020A Summary Forms

6020 3015

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.0999	0.1000	100		90 - 110	M	4/28/2015	00:50	A042815B 0
	Arsenic	0.0989	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	00:50	A042815B 0
	Beryllium	0.0968	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cadmium	0.0936	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Chromium	0.0969	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cobalt	0.0971	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Copper	0.0967	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Lead	0.0972	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Manganese	0.0975	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Molybdenum	0.0982	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Selenium	0.0992	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Silver	0.0944	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Thallium	0.0953	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Vanadium	0.0974	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	00:58	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/28/2015	00:58	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	00:58	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Manganese	0.0048	0.0050	96		70 - 130	M	4/28/2015	00:58	A042815B 0
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	00:58	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1009	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Arsenic	0.0994	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Barium	0.0971	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Beryllium	0.0943	0.1000	94		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cadmium	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Chromium	0.0991	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cobalt	0.0998	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Copper	0.0996	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Lead	0.0992	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Manganese	0.1007	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Molybdenum	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Nickel	0.0969	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Selenium	0.0979	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Silver	0.0955	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Thallium	0.0957	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Vanadium	0.0993	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	02:01	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Silver	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	02:01	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1000	0.1000	100		90 - 110	M	4/28/2015	02:45	A042815B 0
	Arsenic	0.0989	0.1000	99		90 - 110	M	4/28/2015	02:45	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	02:45	A042815B 0
	Beryllium	0.0939	0.1000	94		90 - 110	M	4/28/2015	02:45	A042815B 0
	Cadmium	0.0900	0.1000	90		90 - 110	M	4/28/2015	02:45	A042815B 0
	Chromium	0.0973	0.1000	97		90 - 110	M	4/28/2015	02:45	A042815B 0
	Cobalt	0.0970	0.1000	97		90 - 110	M	4/28/2015	02:45	A042815B 0
	Copper	0.0969	0.1000	97		90 - 110	M	4/28/2015	02:45	A042815B 0
	Lead	0.0971	0.1000	97		90 - 110	M	4/28/2015	02:45	A042815B 0
	Manganese	0.0982	0.1000	98		90 - 110	M	4/28/2015	02:45	A042815B 0
	Molybdenum	0.0973	0.1000	97		90 - 110	M	4/28/2015	02:45	A042815B 0
	Nickel	0.0946	0.1000	95		90 - 110	M	4/28/2015	02:45	A042815B 0
	Selenium	0.1018	0.1000	102		90 - 110	M	4/28/2015	02:45	A042815B 0
	Silver	0.0943	0.1000	94		90 - 110	M	4/28/2015	02:45	A042815B 0
	Thallium	0.0950	0.1000	95		90 - 110	M	4/28/2015	02:45	A042815B 0
	Vanadium	0.0983	0.1000	98		90 - 110	M	4/28/2015	02:45	A042815B 0
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:53	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	02:53	A042815B 0
	Barium	0.0050	0.0050	100		70 - 130	M	4/28/2015	02:53	A042815B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/28/2015	02:53	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:53	A042815B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:53	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:53	A042815B 0
	Copper	0.0045	0.0050	90		70 - 130	M	4/28/2015	02:53	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:53	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:53	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:53	A042815B 0
	Nickel	0.0048	0.0050	96		70 - 130	M	4/28/2015	02:53	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	02:53	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:53	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	02:53	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:53	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Arsenic	0.0028	0.0030	93		70 - 130	M	4/28/2015	03:41	A042815B 0
	Barium	0.0045	0.0050	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Chromium	0.0016	0.0020	80		70 - 130	M	4/28/2015	03:41	A042815B 0
	Cobalt	0.0042	0.0050	84		70 - 130	M	4/28/2015	03:41	A042815B 0
	Copper	0.0042	0.0050	84		70 - 130	M	4/28/2015	03:41	A042815B 0
	Lead	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Manganese	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Nickel	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Selenium	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Silver	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	03:41	A042815B 0
	Vanadium	0.0016	0.0020	80		70 - 130	M	4/28/2015	03:41	A042815B 0
CCV										
	Antimony	0.1004	0.1000	100		90 - 110	M	4/28/2015	03:45	A042815B 0
	Arsenic	0.0985	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Barium	0.0972	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Beryllium	0.0946	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Cadmium	0.0935	0.1000	94		90 - 110	M	4/28/2015	03:45	A042815B 0
	Chromium	0.0983	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Cobalt	0.0975	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Copper	0.0973	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Lead	0.0977	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Manganese	0.0990	0.1000	99		90 - 110	M	4/28/2015	03:45	A042815B 0
	Molybdenum	0.0976	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Nickel	0.0944	0.1000	94		90 - 110	M	4/28/2015	03:45	A042815B 0
	Selenium	0.0974	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Silver	0.0946	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Thallium	0.0948	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Vanadium	0.0989	0.1000	99		90 - 110	M	4/28/2015	03:45	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	04:38	A042815B 0
	Barium	0.0050	0.0050	100		70 - 130	M	4/28/2015	04:38	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Chromium	0.0017	0.0020	85		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Copper	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Selenium	0.0053	0.0050	106		70 - 130	M	4/28/2015	04:38	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	04:38	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
CCV										
	Antimony	0.0994	0.1000	99		90 - 110	M	4/28/2015	04:41	A042815B 0
	Arsenic	0.0976	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Beryllium	0.0909	0.1000	91		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cadmium	0.0955	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Chromium	0.0974	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cobalt	0.0967	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Copper	0.0972	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Lead	0.0973	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Manganese	0.0995	0.1000	100		90 - 110	M	4/28/2015	04:41	A042815B 0
	Molybdenum	0.0975	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Selenium	0.0953	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Silver	0.0938	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Thallium	0.0945	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Vanadium	0.0978	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	00:54	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	00:54	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	00:54	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	00:54	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	01:57	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	01:57	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	01:57	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	01:57	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	02:49	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	02:49	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	02:49	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	02:49	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	02:49	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	02:49	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	03:37	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	03:37	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	03:37	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	03:37	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	04:34	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	04:34	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	04:34	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	04:34	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169338			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:16	A042815B 0024
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	4/28/2015	01:16	A042815B 0024
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	4/28/2015	01:16	A042815B 0024
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	4/28/2015	01:16	A042815B 0024
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:16	A042815B 0024
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:16	A042815B 0024
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Molybdenum	0.00078	J		0.0022	0.00067	0.00222	M	4/28/2015	01:16	A042815B 0024
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:16	A042815B 0024
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:16	A042815B 0024
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	4/28/2015	01:16	A042815B 0024
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:16	A042815B 0024

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Arsenic	0.0002				-0.00300 - -0.00300	4/28/2015	01:01	A042815B 00
	Barium	0.0004				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Cadmium	0.0009				-0.00100 - -0.00100	4/28/2015	01:01	A042815B 00
	Chromium	0.0004				-0.00400 - -0.00400	4/28/2015	01:01	A042815B 00
	Cobalt	0.0006				-0.00600 - -0.00600	4/28/2015	01:01	A042815B 00
	Copper	0.0012				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Lead	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Manganese	0.0011				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Molybdenum	1.9839	2.00000	99		80 - 120%	4/28/2015	01:01	A042815B 00
	Nickel	0.0007				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Selenium	0.0001				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Silver	0.0004				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Vanadium	0.0002				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Arsenic	0.0190	0.02000	95		80 - 120%	4/28/2015	01:05	A042815B 00
	Barium	0.0003				-0.00500 - -0.00500	4/28/2015	01:05	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Cadmium	0.0090	0.01000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Chromium	0.0174	0.02000	87		80 - 120%	4/28/2015	01:05	A042815B 00
	Cobalt	0.0360	0.04000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Copper	0.0173	0.02000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Lead	0.0002				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Manganese	0.0184	0.02000	92		80 - 120%	4/28/2015	01:05	A042815B 00
	Molybdenum	1.9732	2.00000	99		80 - 120%	4/28/2015	01:05	A042815B 00
	Nickel	0.0345	0.04000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Selenium	0.0182	0.02000	91		80 - 120%	4/28/2015	01:05	A042815B 00
	Silver	0.0168	0.02000	84		80 - 120%	4/28/2015	01:05	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Vanadium	0.0378	0.04000	94		80 - 120%	4/28/2015	01:05	A042815B 00

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066604006 **Client ID:** MRC-MW-81A-042215S **LIMS ID:** 2169340

Percent Solids for Sample: 0.00 **Spiked ID:** 2066604006S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.23		0.00		0.222	104		M
Arsenic	mg/L	75 - 125	0.218		0.003		0.222	97		M
Barium	mg/L	75 - 125	2.536		0.167		2.222	107		M
Beryllium	mg/L	75 - 125	0.20757		0.00126		0.22222	93		M
Cadmium	mg/L	75 - 125	0.217		0.000		0.222	98		M
Chromium	mg/L	75 - 125	0.219		0.001		0.222	98		M
Cobalt	mg/L	75 - 125	0.282		0.067		0.222	97		M
Copper	mg/L	75 - 125	0.212		0.003		0.222	94		M
Lead	mg/L	75 - 125	0.230		0.002	U	0.222	104		M
Molybdenum	mg/L	75 - 125	0.231		0.002	U	0.222	104		M
Nickel	mg/L	75 - 125	0.277		0.050		0.222	102		M
Selenium	mg/L	75 - 125	0.213		0.009		0.222	92		M
Silver	mg/L	75 - 125	0.110		0.002	U	0.111	99		M
Thallium	mg/L	75 - 125	0.2238		0.0010	U	0.2222	101		M
Vanadium	mg/L	75 - 125	0.224		0.001		0.222	100		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066604006 **Client ID:** MRC-MW-81A-042215SD **LIMS ID:** 2169341

Percent Solids for Sample: 0.00 **Spiked ID:** 2066604006SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.23		0.00		0.222	104		M
Arsenic	mg/L	75 - 125	0.219		0.003		0.222	97		M
Barium	mg/L	75 - 125	2.542		0.167		2.222	107		M
Beryllium	mg/L	75 - 125	0.20416		0.00000		0.22222	92		M
Cadmium	mg/L	75 - 125	0.215		0.000		0.222	97		M
Chromium	mg/L	75 - 125	0.219		0.000		0.222	99		M
Cobalt	mg/L	75 - 125	0.283		0.006	U	0.222	127	*	M
Copper	mg/L	75 - 125	0.212		0.006	U	0.222	95		M
Lead	mg/L	75 - 125	0.230		0.000		0.222	104		M
Molybdenum	mg/L	75 - 125	0.229		0.000		0.222	103		M
Nickel	mg/L	75 - 125	0.278		0.006	U	0.222	125		M
Selenium	mg/L	75 - 125	0.216		0.009		0.222	93		M
Silver	mg/L	75 - 125	0.109		0.000		0.111	98		M
Thallium	mg/L	75 - 125	0.2247		0.0000		0.2222	101		M
Vanadium	mg/L	75 - 125	0.224		0.001		0.222	100		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066604006S **Client ID:** MRC-MW-81A-042215SD **LIMS ID:** 2169341

Percent Solids for Sample: 0.00 **Duplicate ID:** 2066604006SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.23		0.23		0		M
Arsenic	mg/L	0 - 20	0.218		0.219		0		M
Barium	mg/L	0 - 20	2.536		2.542		0		M
Beryllium	mg/L	0 - 20	0.20757		0.20416		2		M
Cadmium	mg/L	0 - 20	0.217		0.215		1		M
Chromium	mg/L	0 - 20	0.219		0.219		0		M
Cobalt	mg/L	0 - 20	0.282		0.283		0		M
Copper	mg/L	0 - 20	0.212		0.212		0		M
Lead	mg/L	0 - 20	0.230		0.230		0		M
Molybdenum	mg/L	0 - 20	0.231		0.229		1		M
Nickel	mg/L	0 - 20	0.277		0.278		0		M
Selenium	mg/L	0 - 20	0.213		0.216		1		M
Silver	mg/L	0 - 20	0.110		0.109		1		M
Thallium	mg/L	0 - 20	0.2238		0.2247		0		M
Vanadium	mg/L	0 - 20	0.224		0.224		0		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169339									
	Antimony	mg/L	0.2220	0.2196		99		80 - 120	M
	Arsenic	mg/L	0.2220	0.2097		94		80 - 120	M
	Barium	mg/L	2.2220	2.2193		100		80 - 120	M
	Beryllium	mg/L	0.2220	0.2047		92		80 - 120	M
	Cadmium	mg/L	0.2220	0.2176		98		80 - 120	M
	Chromium	mg/L	0.2220	0.2212		100		80 - 120	M
	Cobalt	mg/L	0.2220	0.2259		102		80 - 120	M
	Copper	mg/L	0.2220	0.2206		99		80 - 120	M
	Lead	mg/L	0.2220	0.2262		102		80 - 120	M
	Manganese	mg/L	0.2220	0.2284		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2193		99		80 - 120	M
	Nickel	mg/L	0.2220	0.2378		107		80 - 120	M
	Selenium	mg/L	0.2220	0.1939		87		80 - 120	M
	Silver	mg/L	0.1110	0.1126		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2203		99		80 - 120	M
	Vanadium	mg/L	0.2220	0.2211		100		80 - 120	M

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0024												
BLK	BLK	0028	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0032	101		103		101		100		101		103	
STANDARD 2	STANDARD 2	0035	98		98		99		98		99		99	
STANDARD 3	STANDARD 3	0039	100		102		102		100		100		103	
STANDARD 4	STANDARD 4	0043	98		98		98		97		101		100	
STANDARD 5	STANDARD 5	0046	100		100		100		100		101		101	
ICV	ICV	0050	98		97		97		98		101		99	
ICB1	ICB	0054	90		90		89		89		99		99	
LLICV	LLICV	0058	98		96		95		96		99		99	
ICS-A1	ICSA	0101	89		98		93		98		103		103	
ICS-AB1	ICSAB	0105	92		102		95		101		106		108	
CHECK	ZZZZZZ	0109												
CHECK	ZZZZZZ	0113												
2169338	MB for HBN 69438	0116	99		103		99		97		94		106	
2169339	LCS for HBN 6943	0120	100		105		102		99		93		106	
2169342	ZZZZZZ	0124												
2169343	ZZZZZZ	0127												
2067214003	ZZZZZZ	0131												
2067214005	ZZZZZZ	0135												
2067214007	ZZZZZZ	0139												
2067214009	ZZZZZZ	0142												
2067214011	ZZZZZZ	0146												
2067214013	ZZZZZZ	0150												
CCV1	CCV	0153	101		103		101		99		99		102	
CCB1	CCB	0157	101		104		102		99		97		105	
LLCCV	LLCCV	0201	99		100		98		98		100		99	
2169342	ZZZZZZ	0204												
2067214015	ZZZZZZ	0208												
2067214016	ZZZZZZ	0212												
2066753001	ZZZZZZ	0216												
2066753002	ZZZZZZ	0219												
2066753003	ZZZZZZ	0223												
2066753004	ZZZZZZ	0227												
2066872001	ZZZZZZ	0230												
2066872002	ZZZZZZ	0234												
2066872003	ZZZZZZ	0238												
CCV2	ZZZZZZ	0241												
CCV3	CCV	0245	100		99		100		98		94		97	
CCB2	CCB	0249	100		101		100		98		97		100	
LLCCV	LLCCV	0253	98		98		98		96		97		96	
2066872004	ZZZZZZ	0256												
2066872005	ZZZZZZ	0300												
2067214009	ZZZZZZ	0304												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2066872002	ZZZZZZ	0308												
2066872004	ZZZZZZ	0311												
2066872005	ZZZZZZ	0315												
2066604002	MRC-MW-87B-04221	0319	90		102		95		99		96		100	
2066604004	MRC-MW-60A-04221	0322	96		100		98		96		93		97	
2066604005	MRC-MW-60B-04221	0326	98		107		101		98		93		101	
CHECK	ZZZZZZ	0330												
CCV4	ZZZZZZ	0334												
CCB3	CCB	0337	99		101		99		97		98		98	
LLCCV	LLCCV	0341	107		108		109		108		97		110	
CCV5	CCV	0345	101		102		100		99		102		101	
2066604006	MRC-MW-81A-04221	0349	91		98		95		94		91		99	
2066604006	MRC-MW-81A-04221	0352	94		105		97		96		93		99	
2066604006S	MRC-MW-81A-04221	0356	91		100		93		93		91		99	
2066604006S	MRC-MW-81A-04221	0400	93		103		97		96		92		99	
2066604007	MRC-MW-81B-04221	0404	95		105		98		96		92		101	
2066900002	ZZZZZZ	0408												
2169344	ZZZZZZ	0412												
2169345	ZZZZZZ	0415												
2066900003	ZZZZZZ	0419												
2066900004	ZZZZZZ	0423												
CCV6	ZZZZZZ	0427												
CCB4	ZZZZZZ	0430												
CCB5	CCB	0434	103		107		106		103		100		103	
LLCCV	LLCCV	0438	101		102		103		102		99		99	
CCV7	CCV	0441	103		104		104		102		100		102	
2066900005	ZZZZZZ	0445												
2066900006	ZZZZZZ	0449												
2067191001	ZZZZZZ	0453												
2067191002	ZZZZZZ	0456												
2067191003	ZZZZZZ	0500												
2066900004	ZZZZZZ	0504												
2067212002	ZZZZZZ	0508												
2067212003	ZZZZZZ	0512												
2067212007	ZZZZZZ	0515												
2067212007L	ZZZZZZ	0519												
CCV8	ZZZZZZ	0523												
CCB6	ZZZZZZ	0526												
LLCCV	ZZZZZZ	0530												
2067212007P	ZZZZZZ	0534												
2067213002	ZZZZZZ	0538												
2067213003	ZZZZZZ	0541												
2067213004	ZZZZZZ	0545												
2067213005	ZZZZZZ	0549												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067213006	ZZZZZZ	0553												
2067213006L	ZZZZZZ	0556												
2067213006P	ZZZZZZ	0600												
2067213007	ZZZZZZ	0604												
CCV9	ZZZZZZ	0608												
CCB7	ZZZZZZ	0611												
LLCCV	ZZZZZZ	0615												
CCV10	ZZZZZZ	0619												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0024												
BLK	0028	100											
STANDARD 1	0032	101											
STANDARD 2	0035	99											
STANDARD 3	0039	102											
STANDARD 4	0043	98											
STANDARD 5	0046	101											
ICV	0050	98											
ICB	0054	89											
LLICV	0058	95											
ICSA	0101	99											
ICSAB	0105	102											
ZZZZZZ	0109												
ZZZZZZ	0113												
MB for HBN 69438	0116	100											
LCS for HBN 6943	0120	104											
ZZZZZZ	0124												
ZZZZZZ	0127												
ZZZZZZ	0131												
ZZZZZZ	0135												
ZZZZZZ	0139												
ZZZZZZ	0142												
ZZZZZZ	0146												
ZZZZZZ	0150												
CCV	0153	102											
CCB	0157	102											
LLCCV	0201	99											
ZZZZZZ	0204												
ZZZZZZ	0208												
ZZZZZZ	0212												
ZZZZZZ	0216												
ZZZZZZ	0219												
ZZZZZZ	0223												
ZZZZZZ	0227												
ZZZZZZ	0230												
ZZZZZZ	0234												
ZZZZZZ	0238												
ZZZZZZ	0241												
CCV	0245	100											
CCB	0249	100											
LLCCV	0253	98											
ZZZZZZ	0256												
ZZZZZZ	0300												
ZZZZZZ	0304												
ZZZZZZ	0308												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0311												
ZZZZZZ	0315												
MRC-MW-87B-04221	0319	99											
MRC-MW-60A-04221	0322	100											
MRC-MW-60B-04221	0326	103											
ZZZZZZ	0330												
ZZZZZZ	0334												
CCB	0337	98											
LLCCV	0341	109											
CCV	0345	100											
MRC-MW-81A-04221	0349	101											
MRC-MW-81A-04221	0352	104											
MRC-MW-81A-04221	0356	100											
MRC-MW-81A-04221	0400	104											
MRC-MW-81B-04221	0404	101											
ZZZZZZ	0408												
ZZZZZZ	0412												
ZZZZZZ	0415												
ZZZZZZ	0419												
ZZZZZZ	0423												
ZZZZZZ	0427												
ZZZZZZ	0430												
CCB	0434	105											
LLCCV	0438	102											
CCV	0441	104											
ZZZZZZ	0445												
ZZZZZZ	0449												
ZZZZZZ	0453												
ZZZZZZ	0456												
ZZZZZZ	0500												
ZZZZZZ	0504												
ZZZZZZ	0508												
ZZZZZZ	0512												
ZZZZZZ	0515												
ZZZZZZ	0519												
ZZZZZZ	0523												
ZZZZZZ	0526												
ZZZZZZ	0530												
ZZZZZZ	0534												
ZZZZZZ	0538												
ZZZZZZ	0541												
ZZZZZZ	0545												
ZZZZZZ	0549												
ZZZZZZ	0553												
ZZZZZZ	0556												

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM021|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-021

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0600												
ZZZZZZ	0604												
ZZZZZZ	0608												
ZZZZZZ	0611												
ZZZZZZ	0615												
ZZZZZZ	0619												

6020 3015

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69438						
2169338	MB for HBN 69438 [MDIG/50538	MB	QC-WAT	4/27/15	45.0	50.0	
2169339	LCS for HBN 69438 [MDIG/50538	LCS	QC-WAT	4/27/15	45.0	50.0	
2066604002	MRC-MW-87B-042215	SAM	WATER	4/27/15	45.0	50.0	
2066604004	MRC-MW-60A-042215	SAM	WATER	4/27/15	45.0	50.0	
2066604005	MRC-MW-60B-042215	SAM	WATER	4/27/15	45.0	50.0	
2066604006	MRC-MW-81A-042215	SAM	WATER	4/27/15	45.0	50.0	
2066604006S	MRC-MW-81A-042215S	MS	WATER	4/27/15	45.0	50.0	
2066604006SD	MRC-MW-81A-042215SD	MSD	WATER	4/27/15	45.0	50.0	
2066604007	MRC-MW-81B-042215	SAM	WATER	4/27/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0024																										
BLK	1.00	0028			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0032			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0035			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0039			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0043			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0046			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0050			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0054			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0058			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0101			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0105			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0109																										
ZZZZZZ	1.00	0113																										
2169338	1.00	0116			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2169339	1.00	0120			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0124																										
ZZZZZZ	1.00	0127																										
ZZZZZZ	1.00	0131																										
ZZZZZZ	1.00	0135																										
ZZZZZZ	1.00	0139																										
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
ZZZZZZ	1.00	0150																										
CCV1	1.00	0153			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0157			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0201			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0204																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	1.00	0212																										
ZZZZZZ	1.00	0216																										
ZZZZZZ	1.00	0219																										
ZZZZZZ	1.00	0223																										
ZZZZZZ	1.00	0227																										
ZZZZZZ	1.00	0230																										
ZZZZZZ	1.00	0234																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM021|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-021

Instrument ID Number: AGILENT 7700 ICPMS **Method:** M **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0238																										
ZZZZZZ	1.00	0241																										
CCV3	1.00	0245			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0249			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0253			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0300																										
ZZZZZZ	5.00	0304																										
ZZZZZZ	5.00	0308																										
ZZZZZZ	5.00	0311																										
ZZZZZZ	20.00	0315																										
2066604002	1.00	0319			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066604004	1.00	0322			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066604005	1.00	0326			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0330																										
ZZZZZZ	1.00	0334																										
CCB3	1.00	0337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0341			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV5	1.00	0345			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066604006	1.00	0349			X		X	X	X		X	X	X		X				X			X		X	X			*
2066604006	1.00	0352				X															X							
2066604006S	1.00	0356			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066604006SD	1.00	0400			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066604007	1.00	0404			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0408																										
ZZZZZZ	1.00	0412																										
ZZZZZZ	1.00	0415																										
ZZZZZZ	1.00	0419																										
ZZZZZZ	1.00	0423																										
ZZZZZZ	1.00	0427																										
ZZZZZZ	1.00	0430																										
CCB5	1.00	0434			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV7	1.00	0441			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0445																										
ZZZZZZ	1.00	0449																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0453																								
ZZZZZZ	1.00	0456																								
ZZZZZZ	1.00	0500																								
ZZZZZZ	5.00	0504																								
ZZZZZZ	1.00	0508																								
ZZZZZZ	1.00	0512																								
ZZZZZZ	1.00	0515																								
ZZZZZZ	5.00	0519																								
ZZZZZZ	1.00	0523																								
ZZZZZZ	1.00	0526																								
ZZZZZZ	1.00	0530																								
ZZZZZZ	1.00	0534																								
ZZZZZZ	1.00	0538																								
ZZZZZZ	1.00	0541																								
ZZZZZZ	1.00	0545																								
ZZZZZZ	1.00	0549																								
ZZZZZZ	1.00	0553																								
ZZZZZZ	5.00	0556																								
ZZZZZZ	1.00	0600																								
ZZZZZZ	1.00	0604																								
ZZZZZZ	1.00	0608																								
ZZZZZZ	1.00	0611																								
ZZZZZZ	1.00	0615																								
ZZZZZZ	1.00	0619																								

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM021|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-021

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	00:24																									
BLK	1.00	00:28					X																				
STANDARD 1	1.00	00:32					X																				
STANDARD 2	1.00	00:35					X																				
STANDARD 3	1.00	00:39					X																				
STANDARD 4	1.00	00:43					X																				
STANDARD 5	1.00	00:46					X																				
ICV	1.00	00:50					X																				
ICB1	1.00	00:54					X																				
LLICV	1.00	00:58					X																				
ICS-A1	1.00	01:01					X																				
ICS-AB1	1.00	01:05					X																				
ZZZZZZ	1.00	01:09																									
ZZZZZZ	1.00	01:13																									
2169338	1.00	01:16					X																				
2169339	1.00	01:20					X																				
ZZZZZZ	1.00	01:24																									
ZZZZZZ	1.00	01:27																									
ZZZZZZ	1.00	01:31																									
ZZZZZZ	1.00	01:35																									
ZZZZZZ	1.00	01:39																									
ZZZZZZ	1.00	01:42																									
ZZZZZZ	1.00	01:46																									
ZZZZZZ	1.00	01:50																									
CCV1	1.00	01:53					X																				
CCB1	1.00	01:57					X																				
LLCCV	1.00	02:01					X																				
ZZZZZZ	1.00	02:04																									
ZZZZZZ	1.00	02:08																									
ZZZZZZ	1.00	02:12																									
ZZZZZZ	1.00	02:16																									

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM021|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-021

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	02:19																										
ZZZZZZ	1.00	02:23																										
ZZZZZZ	1.00	02:27																										
ZZZZZZ	1.00	02:30																										
ZZZZZZ	1.00	02:34																										
ZZZZZZ	1.00	02:38																										
ZZZZZZ	1.00	02:41																										
CCV3	1.00	02:45					X																					
CCB2	1.00	02:49					X																					
LLCCV	1.00	02:53					X																					
ZZZZZZ	1.00	02:56																										
ZZZZZZ	1.00	03:00																										
ZZZZZZ	5.00	03:04																										
ZZZZZZ	5.00	03:08																										
ZZZZZZ	5.00	03:11																										
ZZZZZZ	20.00	03:15																										
2066604002	1.00	03:19					X																					
2066604004	1.00	03:22					X																					
2066604005	1.00	03:26					X																					
ZZZZZZ	1.00	03:30																										
ZZZZZZ	1.00	03:34																										
CCB3	1.00	03:37					X																					
LLCCV	1.00	03:41					X																					
CCV5	1.00	03:45					X																					
2066604006	1.00	03:49					X																					
2066604006	1.00	03:52																										
2066604006S	1.00	03:56					X																					
2066604006SD	1.00	04:00					X																					
2066604007	1.00	04:04					X																					
ZZZZZZ	1.00	04:08																										
ZZZZZZ	1.00	04:12																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM021|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-021

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	04:15																										
ZZZZZZ	1.00	04:19																										
ZZZZZZ	1.00	04:23																										
ZZZZZZ	1.00	04:27																										
ZZZZZZ	1.00	04:30																										
CCB5	1.00	04:34					X																					
LLCCV	1.00	04:38					X																					
CCV7	1.00	04:41					X																					
ZZZZZZ	1.00	04:45																										
ZZZZZZ	1.00	04:49																										
ZZZZZZ	1.00	04:53																										
ZZZZZZ	1.00	04:56																										
ZZZZZZ	1.00	05:00																										
ZZZZZZ	5.00	05:04																										
ZZZZZZ	1.00	05:08																										
ZZZZZZ	1.00	05:12																										
ZZZZZZ	1.00	05:15																										
ZZZZZZ	5.00	05:19																										
ZZZZZZ	1.00	05:23																										
ZZZZZZ	1.00	05:26																										
ZZZZZZ	1.00	05:30																										
ZZZZZZ	1.00	05:34																										
ZZZZZZ	1.00	05:38																										
ZZZZZZ	1.00	05:41																										
ZZZZZZ	1.00	05:45																										
ZZZZZZ	1.00	05:49																										
ZZZZZZ	1.00	05:53																										
ZZZZZZ	5.00	05:56																										
ZZZZZZ	1.00	06:00																										
ZZZZZZ	1.00	06:04																										
ZZZZZZ	1.00	06:08																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM021|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-021

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	06:11																									
ZZZZZZ	1.00	06:15																									
ZZZZZZ	1.00	06:19																									

Total Metals by 6010C Summary Forms

6010C 3015

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.974	1.000	97		90 - 110	P	4/27/2015	09:48	042715 3015
CCV	Iron	2.454	2.500	98		90 - 110	P	4/27/2015	10:01	042715 3015
CCV	Iron	2.625	2.500	105		90 - 110	P	4/27/2015	10:49	042715 3015
CCV	Iron	2.571	2.500	103		90 - 110	P	4/27/2015	12:05	042715 3015
CCV	Iron	2.602	2.500	104		90 - 110	P	4/27/2015	12:43	042715 3015
LLCCV	Iron	0.070	0.060	117		70 - 130	P	4/27/2015	12:49	042715 3015

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.062	0.060	103		70 - 130	P	4/27/2015	09:57	042715 301

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/27/2015	09:54	042715 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/27/2015	10:52	042715 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/27/2015	12:08	042715 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/27/2015	12:46	042715 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169159			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/27/2015	12:12	042715 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	112.2	125.0	90		80 - 120%	4/27/2015	10:06	042715 3015
ICSAB									
	Iron	114.6	125.0	92		80 - 120%	4/27/2015	10:09	042715 3015
ICSA									
	Iron	115.0	125.0	92		80 - 120%	4/27/2015	12:53	042715 3015
ICSAB									
	Iron	119.9	125.0	96		80 - 120%	4/27/2015	12:56	042715 3015

6010C 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169160									
	Iron	mg/L	1.11	1.181		106		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69400						
2169160	LCS for HBN 69400 [MDIG/50526	LCS	QC-WAT	4/26/15	45.0	50.0	
2169159	MB for HBN 69400 [MDIG/50526	MB	QC-WAT	4/26/15	45.0	50.0	
2066604002	MRC-MW-87B-042215	SAM	WATER	4/26/15	45.0	50.0	
2066604004	MRC-MW-60A-042215	SAM	WATER	4/26/15	45.0	50.0	
2066604005	MRC-MW-60B-042215	SAM	WATER	4/26/15	45.0	50.0	
2066604006	MRC-MW-81A-042215	SAM	WATER	4/26/15	45.0	50.0	
2066604007	MRC-MW-81B-042215	SAM	WATER	4/26/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042715 3015

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0930												X																
ICAL2	1.00	0933												X																
ICAL3	1.00	0936												X																
ICAL4	1.00	0939												X																
ICAL5	1.00	0942												X																
ZZZZZZ	1.00	0945																												
ICV2	1.00	0948												X																
ICB1	1.00	0954												X																
CRDL1	1.00	0957												X																
CCV1	1.00	1001												X																
HIGH	1.00	1003												X																
ICS-A1	1.00	1006												X																
ICS-AB1	1.00	1009												X																
ZZZZZZ	1.00	1018																												
ZZZZZZ	1.00	1021																												
ZZZZZZ	1.00	1024																												
ZZZZZZ	1.00	1027																												
2169160	1.00	1030												X																
ZZZZZZ	5.00	1033																												
ZZZZZZ	5.00	1036																												
ZZZZZZ	1.00	1040																												
ZZZZZZ	5.00	1043																												
ZZZZZZ	5.00	1046																												
CCV2	1.00	1049												X																
CCB1	1.00	1052												X																
ZZZZZZ	5.00	1055																												
ZZZZZZ	5.00	1058																												
ZZZZZZ	5.00	1102																												
ZZZZZZ	5.00	1105																												
ZZZZZZ	5.00	1108																												
ZZZZZZ	5.00	1111																												
ZZZZZZ	5.00	1115																												
ZZZZZZ	5.00	1118																												
ZZZZZZ	5.00	1121																												
ZZZZZZ	5.00	1124																												
ZZZZZZ	1.00	1128																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042715 3015

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1130																									
ZZZZZZ	1.00	1134																									
ZZZZZZ	1.00	1137																									
ZZZZZZ	5.00	1140																									
ZZZZZZ	5.00	1143																									
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1149																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	5.00	1159																									
ZZZZZZ	5.00	1202																									
CCV4	1.00	1205											X														
CCB3	1.00	1208											X														
2169159	1.00	1212											X														
2066604002	1.00	1215											X														
2066604004	1.00	1218											X														
2066604005	1.00	1221											X														
2066604006	1.00	1224											X														
2066604007	1.00	1227											X														
ZZZZZZ	1.00	1231																									
ZZZZZZ	5.00	1234																									
ZZZZZZ	1.00	1237																									
ZZZZZZ	1.00	1240																									
CCV5	1.00	1243											X														
CCB4	1.00	1246											X														
LLCCV	1.00	1249											X														
ICS-A2	1.00	1253											X														
ICS-AB2	1.00	1256											X														
ZZZZZZ	10.00	1301																									
ZZZZZZ	10.00	1304																									
ZZZZZZ	50.00	1307																									
ZZZZZZ	10.00	1310																									
ZZZZZZ	5.00	1314																									
ZZZZZZ	10.00	1317																									
ZZZZZZ	10.00	1320																									
ZZZZZZ	20.00	1323																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042715 3015

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	20.00	1326																								
ZZZZZZ	20.00	1329																								
ZZZZZZ	1.00	1333																								
ZZZZZZ	1.00	1336																								
ZZZZZZ	1.00	1339																								
ZZZZZZ	10.00	1345																								
ZZZZZZ	5.00	1348																								
ZZZZZZ	5.00	1351																								
ZZZZZZ	5.00	1354																								
ZZZZZZ	5.00	1357																								
ZZZZZZ	5.00	1401																								
ZZZZZZ	5.00	1404																								
ZZZZZZ	5.00	1407																								
ZZZZZZ	5.00	1410																								
ZZZZZZ	5.00	1414																								
ZZZZZZ	1.00	1417																								
ZZZZZZ	1.00	1420																								
ZZZZZZ	5.00	1423																								
ZZZZZZ	5.00	1426																								
ZZZZZZ	5.00	1430																								
ZZZZZZ	5.00	1433																								
ZZZZZZ	5.00	1436																								
ZZZZZZ	5.00	1439																								
ZZZZZZ	5.00	1443																								
ZZZZZZ	5.00	1446																								
ZZZZZZ	5.00	1449																								
ZZZZZZ	5.00	1452																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1458																								
ZZZZZZ	1.00	1501																								
ZZZZZZ	1.00	1505																								
ZZZZZZ	1.00	1507																								
ZZZZZZ	1.00	1511																								
ZZZZZZ	5.00	1514																								
ZZZZZZ	5.00	1517																								
ZZZZZZ	5.00	1520																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042715 3015

Start Date: 4/27/2015 End Date: 4/27/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1523																								
ZZZZZZ	5.00	1526																								
ZZZZZZ	5.00	1529																								
ZZZZZZ	1.00	1533																								
ZZZZZZ	1.00	1536																								
ZZZZZZ	5.00	1542																								
ZZZZZZ	5.00	1545																								
ZZZZZZ	5.00	1548																								
ZZZZZZ	5.00	1552																								
ZZZZZZ	5.00	1555																								
ZZZZZZ	5.00	1558																								
ZZZZZZ	5.00	1601																								
ZZZZZZ	5.00	1605																								
ZZZZZZ	5.00	1608																								
ZZZZZZ	10.00	1611																								
ZZZZZZ	1.00	1614																								
ZZZZZZ	1.00	1617																								
ZZZZZZ	1.00	1620																								
ZZZZZZ	1.00	1623																								
ZZZZZZ	1.00	1626																								
ZZZZZZ	1.00	1630																								
ZZZZZZ	1.00	1633																								
ZZZZZZ	1.00	1636																								
ZZZZZZ	1.00	1639																								
ZZZZZZ	1.00	1642																								
ZZZZZZ	1.00	1646																								
ZZZZZZ	1.00	1649																								
ZZZZZZ	1.00	1652																								
ZZZZZZ	1.00	1655																								
ZZZZZZ	1.00	1658																								
ZZZZZZ	1.00	1701																								
ZZZZZZ	1.00	1705																								
ZZZZZZ	1.00	1747																								

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	13:19	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:10	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:23	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:37	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:49	043015W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	13:20	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:11	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:24	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:38	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:50	043015W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171357			QC-WATER								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/30/2015	14:22	043015W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171358									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-021

Contract: TMM021|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70337						
2171357	MB for HBN 70337 [MDIG/50618	MB	QC-WAT	4/30/15	25.0	25.0	
2171358	LCS for HBN 70337 [MDIG/50618	LCS	QC-WAT	4/30/15	25.0	25.0	
2066604002	MRC-MW-87B-042215	SAM	WATER	4/30/15	25.0	25.0	
2066604004	MRC-MW-60A-042215	SAM	WATER	4/30/15	25.0	25.0	
2066604005	MRC-MW-60B-042215	SAM	WATER	4/30/15	25.0	25.0	
2066604006	MRC-MW-81A-042215	SAM	WATER	4/30/15	25.0	25.0	
2066604007	MRC-MW-81B-042215	SAM	WATER	4/30/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1312																X									
Standard #1 (0.2ppb	1.00	1313																X									
	1.00	1314																X									
	1.00	1315																X									
	1.00	1317																X									
	1.00	1318																X									
ICV1	1.00	1319																X									
ICB1	1.00	1320																X									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1323																									
ZZZZZZ	1.00	1324																									
ZZZZZZ	1.00	1325																									
ZZZZZZ	1.00	1326																									
ZZZZZZ	1.00	1327																									
ZZZZZZ	1.00	1328																									
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1330																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1351																										
ZZZZZZ	1.00	1352																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	1.00	1354																										
ZZZZZZ	1.00	1355																										
ZZZZZZ	1.00	1356																										
ZZZZZZ	1.00	1357																										
ZZZZZZ	1.00	1358																										
ZZZZZZ	1.00	1359																										
ZZZZZZ	1.00	1400																										
ZZZZZZ	1.00	1402																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1404																										
ZZZZZZ	1.00	1405																										
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1407																										
ZZZZZZ	1.00	1408																										
ZZZZZZ	1.00	1409																										
CCV4	1.00	1410																X										
CCB4	1.00	1411																X										
ZZZZZZ	1.00	1412																										
ZZZZZZ	1.00	1413																										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1416																										
ZZZZZZ	1.00	1417																										
ZZZZZZ	1.00	1418																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1420																										
ZZZZZZ	1.00	1421																										
2171357	1.00	1422																X										
CCV5	1.00	1423																X										
CCB5	1.00	1424																X										
2171358	1.00	1426																X										
ZZZZZZ	1.00	1427																										
ZZZZZZ	1.00	1428																										
ZZZZZZ	1.00	1429																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1430																										
ZZZZZZ	1.00	1431																										
ZZZZZZ	1.00	1432																										
ZZZZZZ	1.00	1433																										
ZZZZZZ	1.00	1434																										
2066604002	1.00	1435																X										
CCV6	1.00	1437																X										
CCB6	1.00	1438																X										
2066604004	1.00	1439																X										
2066604005	1.00	1440																X										
2066604006	1.00	1441																X										
2066604007	1.00	1442																X										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1445																										
ZZZZZZ	1.00	1446																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1448																										
CCV7	1.00	1449																X										
CCB7	1.00	1450																X										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1504																										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1507																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM021|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-021

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1508																									
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1511																									
ZZZZZZ	1.00	1512																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1515																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1518																									
ZZZZZZ	1.00	1519																									
ZZZZZZ	1.00	1520																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1522																									
ZZZZZZ	1.00	1524																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1526																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1528																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1530																									
ZZZZZZ	1.00	1531																									
ZZZZZZ	1.00	1532																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1534																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1537																									

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511437

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1562 (HBN: 147840)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 444330
Analyzed: 04/28/2015 14:25
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 444331
Analyzed: 04/28/2015 14:46
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1511256001	**MS:**	444332	**MSD:**	444333
Analyzed:	04/28/2015 15:05	**Analyzed:**	04/28/2015 15:24	**Analyzed:**	04/28/2015 15:43
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.800	4.62	5	* 76.4	85.3	112.8	4.74	78.9	2.57	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511437

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/1562 (HBN: 147840)		
Analyzed By:	Thomas Bosch		

Continuing Calibration Verification

	CCV: 444326 Analyzed: 04/28/2015 13:09 Units: ug/L Criteria: ± 15%			CCV: 444334 Analyzed: 04/28/2015 18:53 Units: ug/L Criteria: ± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	26.0	25.0	104	24.6	25.0	98.4

Interference Check Sample

	ICSA: 444329 Analyzed: 04/28/2015 14:06 Units: ug/L Criteria: ± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

	LODV: 444328 Analyzed: 04/28/2015 13:47 Units: ug/L Criteria: ± 50%			LODV: 444335 Analyzed: 04/28/2015 19:12 Units: ug/L Criteria: ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.145	0.100	145	0.163	0.100	* 163

Comments

The percent recoveries for the matrix spike and matrix spike duplicate (MS/MSD) were outside of performance limits, due to matrix effect.
The Limit of Detection Verification standard failed percent recovery (LODV2 – 444335).

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	4/29/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Total Alkalinity by Method 2320B Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2320B

SDG No.: TMM-021

Prep Blank A Matrix (soil/water): _____ Units: _____

Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/24/15 (2)		Continuing Calibration Blanks (mg/L) (1)4/24/15 (2)		(1)4/24/15 (2)		(1) (2)		Preparation Blank A ID: (1) (2)		Preparation Blank B ID: (1) (2)	
Total Alkalinity	1.18	J	3.02	J	3.25	J						

(1) Analysis Date

(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 2320B

SDG No.: TMM-021

Instrument ID: PC-Titration Plus

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Acc. Limit (%)
Total Alkalinity	50	56	112	*	90-110	50	47	94		46	91		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments: All samples associated with failing ICV were re-run

Ammonia by Method 4500NH3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D SDG No.: TMM-021

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/6/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/6/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2173012 (1)5/6/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.10	U	0.10	U					0.093	J		

(1) Analysis Date

(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D SDG No.: TMM-021

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/7/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/7/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2174296 (1)5/7/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.10	U	0.050	J					0.090	J		

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-021

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	10.0	100		90-110	10.0	10.6	106					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-021

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/7/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/7/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	9.34	93		90-110	10.0	9.43	94					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	4500NH3D	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	2173013
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	5/6/2015	Instrument ID:	ISE
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.80	98		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	4500NH3D	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	2174297
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	5/7/2015	Instrument ID:	ISE
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.11	91		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Anions by Method 300 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-021

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/23/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/23/15	(2)	(1)4/23/15	(2)	(1)4/23/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.15	J	0.21	J	0.21	J	0.24	J				
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Sulfate	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-021

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/24/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/24/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.15	J	0.15	J								
Nitrite-Nitrogen	0.10	U	0.10	U								
Nitrate-Nitrogen	0.10	U	0.10	U								
Sulfate	1.0	U	1.0	U								

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.5	102		90-110	20.0	--	--		20.3	102		90-110
Nitrite-Nitrogen	0.50	0.53	106		90-110	0.50	--	--		0.54	108		90-110
Nitrate-Nitrogen	2.50	2.52	101		90-110	2.50	--	--		2.47	99		90-110
Sulfate	20.0	20.5	102		90-110	20.0	--	--		20.1	100		90-110
Chloride	40.0	39.8	100		90-110	40.0	39.6	99		--	--		90-110
Nitrite-Nitrogen	1.00	1.09	109		90-110	1.00	1.09	109		--	--		90-110
Nitrate-Nitrogen	5.00	4.93	99		90-110	5.00	4.87	97		--	--		90-110
Sulfate	40.0	38.5	96		90-110	40.0	38.2	95		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.3	101		90-110	20.0	20.2	101					90-110
Nitrite-Nitrogen	0.50	0.54	108		90-110	0.50	0.54	108					90-110
Nitrate-Nitrogen	2.50	2.47	99		90-110	2.50	2.48	99					90-110
Sulfate	20.0	20.1	100		90-110	20.0	20.1	101					90-110
Chloride	40.0	39.4	98		90-110	40.0	--	--					90-110
Nitrite-Nitrogen	1.00	1.09	109		90-110	1.00	--	--					90-110
Nitrate-Nitrogen	5.00	4.86	97		90-110	5.00	--	--					90-110
Sulfate	40.0	38.2	95		90-110	40.0	--	--					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.49	100		90-110	2.50	--	--		2.52	101		90-110
Nitrite-Nitrogen	0.50	0.50	100		90-110	0.50	--	--		0.49	98		90-110
Nitrate-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.48	96		90-110
Sulfate	2.50	2.56	102		90-110	2.50	--	--		2.72	109		90-110
Chloride	5.00	5.13	103		90-110	5.00	5.12	102		--	--		90-110
Nitrite-Nitrogen	1.00	1.03	103		90-110	1.00	1.02	102		--	--		90-110
Nitrate-Nitrogen	1.00	1.02	102		90-110	1.00	0.99	99		--	--		90-110
Sulfate	5.00	5.19	104		90-110	5.00	5.21	104		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.47	99		90-110	2.50	2.49	100					90-110
Nitrite-Nitrogen	0.50	0.52	104		90-110	0.50	0.51	102					90-110
Nitrate-Nitrogen	0.50	0.47	94		90-110	0.50	0.49	98					90-110
Sulfate	2.50	2.50	100		90-110	2.50	2.55	102					90-110
Chloride	5.00	4.86	97		90-110	5.00	--	--					90-110
Nitrite-Nitrogen	1.00	1.03	103		90-110	1.00	--	--					90-110
Nitrate-Nitrogen	1.00	0.96	96		90-110	1.00	--	--					90-110
Sulfate	5.00	5.01	100		90-110	5.00	--	--					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Chloride	20.0	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	2.50	--	--								90-110
Sulfate	20.0	--	--								90-110
Chloride	40.0	39.7	99								90-110
Nitrite-Nitrogen	1.00	1.07	107								90-110
Nitrate-Nitrogen	5.00	4.89	98								90-110
Sulfate	40.0	38.4	96								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-021

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/23/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	0.50	--	--								90-110
Sulfate	2.50	--	--								90-110
Chloride	5.00	5.14	103								90-110
Nitrite-Nitrogen	1.00	1.03	103								90-110
Nitrate-Nitrogen	1.00	0.99	99								90-110
Sulfate	5.00	5.06	101								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	2168142
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/23/2015	Instrument ID:	DX-500
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	19.9	99		90-110
Nitrite-nitrogen	0.50	0.54	108		90-110
Nitrate-nitrogen	2.50	2.41	96		90-110
Sulfate	20.0	19.4	97		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	2168430
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/24/2015	Instrument ID:	DX-500
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	19.8	99		90-110
Nitrite-nitrogen	0.50	0.54	108		90-110
Nitrate-nitrogen	2.50	2.42	97		90-110
Sulfate	20.0	19.6	98		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	SSL
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/23/2015	Instrument ID:	DX-500
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.47	99		90-110
Nitrite-nitrogen	0.50	0.49	98		90-110
Nitrate-nitrogen	0.50	0.49	98		90-110
Sulfate	2.50	2.47	99		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-021
Matrix (soil/water):	water	Lab Sample ID:	SSL
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	4/24/2015	Instrument ID:	DX-500
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.45	98		90-110
Nitrite-nitrogen	0.50	0.51	102		90-110
Nitrate-nitrogen	0.50	0.48	96		90-110
Sulfate	2.50	2.44	98		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Dissolved Total Organic Carbon by Method 9060A Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 9060A

SDG No.: TMM-021

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)4/29/15	(2)	Continuing Calibration Blanks (mg/L) (1)4/29/15	(2)	(1)4/29/15	(2)	(1)4/29/15	(2)	Preparation Blank A ID: DISS BLANK (1)4/29/15	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U	1.0	U	--	--		
TOC, Dissolved	--	--	--	--	--	--	--	--	1.0	U		

(1) Analysis Date

(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B2
Inorganic Blank Summary

Analysis Method: 9060A SDG No.: TMM-021

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Continuing Calibration Blanks (mg/L) (1)4/29/15	(2)	(1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U										
TOC, Dissolved	--	--										

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A

SDG No.: TMM-021

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.92	92		85-115	5.00	--	--		5.10	102		90-110
						8.00	8.08	101		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A

SDG No.: TMM-021

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)4/29/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)	
Total Organic Carbon	5.00	5.03	101		--	--					90-110	
	8.00	--	--		8.19	102					90-110	

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 9060A
SDG No.: TMM-021

Matrix (soil/water): water
Lab Sample ID: 5.0 mg/L QC DISS
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/29/2015
Instrument ID: Vario TOC
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Organic Carbon, Dissolved	5.00	5.06	101		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Total Dissolved Solidsby Method 2540C Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2540C SDG No.: TMM-021

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)	(2)	Continuing Calibration Blanks (mg/L) (1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2169216 (1) 4/26/15	(2)	Preparation Blank B ID: (1)	(2)
Total Dissolved Solids									5	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 2540C
SDG No.: TMM-021

Matrix (soil/water): water
Lab Sample ID: 2169217
Units: mg/L
Lab File ID: N/A
Date Analyzed: 4/26/2015
Instrument ID: N/A
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Dissolved Solids	500	490	98		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Orthophosphate by Method 365.3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 365.3 SDG No.: TMM-021

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)4/24/15 (2)		Continuing Calibration Blanks (mg/L) (1)4/24/15 (2)		(1) (2)		(1) (2)		Preparation Blank A ID: (1) (2)		Preparation Blank B ID: (1) (2)	
Orthophosphate	0.02	U	0.02	U								

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 365.3 SDG No.: TMM-021

Instrument ID: DR5000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%) (2)		Acc. Limit (%)	True Conc.	Conc. Recovered (1)4/24/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Orthophosphate	0.200	0.205	102		90-110	0.200	--	--					90-110
						0.800	0.791	99					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JUNE 11, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- VOC / 1,4-DIOXANE / METALS**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2066900R

SAMPLES: 7/Aqueous/VOC

MRC-DUP02-042315	MRC-MW-58A-042315	MRC-MW-76A-042315
MRC-MW-76B-042315	MRC-MW-78B-042315	MRC-MW-92C-042315
TB-042315		

2/Aqueous/1,4-Dioxane

MRC-DUP02-042315	MRC-MW-58A-042315

5/Aqueous/Metals

MRC-MW-26A-042315	MRC-MW-76A-042315	MRC-MW-76B-042315
MRC-MW-78B-042315	MRC-MW-92C-042315	

Overview

The sample set for Lockheed- MRC, SDG 2066900R consists of seven (7) aqueous environmental samples and a trip blank. Six (6) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Two (2) aqueous environmental samples were analyzed for 1.4-dioxane. Five (5) aqueous environmental samples were analyzed for metals. There is one field duplicate pair included in this SDG: MRC-DUP02-042315 and MRC-MW-58A-042315.

The samples were collected on April 23, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, 7470A, and EPA Method 522 analytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation, field duplicate precision and detection limits.

Areas of concern with respect to data quality are listed below.

Major Problems

- The initial calibration relative response factor (RRF) for 1,4-dioxane was less than the 0.01 quality control limit in the VOC fraction on April 29, 2015 on instrument ms15.i. The nondetected 1,4-dioxane results were qualified as rejected (UR).

Minor Problems

- The continuing calibration percent difference (%D) for 2-butanone was greater than the 20% quality control limit on April 30, 2015 @ 01:48 on instrument ms15.i. The nondetected 2-butanone results in the affected samples were qualified as estimated (UJ).

- Contamination was detected in the trip blank TB-042315.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
bromomethane	0.56	2.8

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. The detected result less than the action level was qualified as (U).

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Contamination was detected in the laboratory method blank associated with batch 2170306 affecting the trip blank.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane	0.52	2.6
Carbon disulfide	0.38	1.9
1,4-dichlorobenzene	0.27	1.35

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. No action was taken on the field quality blank due to laboratory blank contamination.

The matrix spike/ matrix spike duplicate (MS/MSD) percent recoveries of iron were not calculated in spiked sample MRC-MW-76B-042315. The sample concentration was greater than 4X the spike amount. No action was taken.

1,4-dioxane was reported in both the 8260B method and 522 method.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The RRF of 1,4-dioxane was less than the quality control limit in the VOC fraction. Bromomethane were detected in the trip blank. The continuing calibration %D for 2-butanone exceeded quality control limits.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech
Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-26A-042315			MRC-MW-76A-042315			MRC-MW-76B-042315			MRC-MW-78B-042315		
SDG: 2066900R	LAB_ID	2066900006			2066900004			2066900005			2066900002		
FRACTION: M	SAMP_DATE	4/23/2015			4/23/2015			4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.001	U		0.0012	J	P	0.001	U		0.0021	J	P
BARIUM		0.44			0.098			0.12			0.1		
BERYLLIUM		0.016			0.012			0.0015			0.0003	U	
CADMIUM		0.00037	U		0.00037	U		0.00037	U		0.00037	U	
CHROMIUM		0.00074	U		0.00074	U		0.00074	U		0.0016	J	P
COBALT		0.41			0.51			0.19			0.06		
COPPER		0.0019	U		0.0039	J	P	0.0019	U		0.009		
IRON		30.1			20.8			20.1			4		
LEAD		0.00074	U		0.00074	U		0.00074	U		0.0011	J	P
MANGANESE		8.7			25.3			7.5			1.6		
MERCURY		0.00017	U		0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM		0.00074	U		0.00074	U		0.00074	U		0.0027		
NICKEL		0.21			0.47			0.27			0.015		
SELENIUM		0.0019	U		0.0029	J	P	0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.00074	U		0.00074	U		0.00074	U		0.0037		

PROJ_NO: 06247	NSAMPLE	MRC-MW-92C-042315		
SDG: 2066900R	LAB_ID	2066900003		
FRACTION: M	SAMP_DATE	4/23/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.001	U	
BARIUM		0.15		
BERYLLIUM		0.00032	J	P
CADMIUM		0.00037	U	
CHROMIUM		0.0015	J	P
COBALT		0.036		
COPPER		0.0019	U	
IRON		24.9		
LEAD		0.00074	U	
MANGANESE		1.3		
MERCURY		0.00017	U	
MOLYBDENUM		0.0017	J	P
NICKEL		0.028		
SELENIUM		0.0019	U	
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-DUP02-042315			MRC-MW-58A-042315		
SDG: 2066900R	LAB_ID	2066900008			2066900007		
FRACTION: OS	SAMP_DATE	4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	MRC-MW-58A-042315					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.36			0.38		

PROJ_NO: 06247	NSAMPLE	MRC-DUP02-042315			MRC-MW-58A-042315			MRC-MW-76A-042315			MRC-MW-76B-042315		
SDG: 2066900R	LAB_ID	2066900008			2066900007			2066900004			2066900005		
FRACTION: OV	SAMP_DATE	4/23/2015			4/23/2015			4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MRC-MW-58A-042315											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U		1.7		
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		1.2		
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	UR	C	58.9	UR	C	58.9	UR	C	58.9	UR	C
2-BUTANONE		1.8	UJ	C	1.8	UJ	C	1.8	UJ	C	1.8	UJ	C
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		22.1			3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.55	U	B	0.39	U		0.58	U	B	0.51	U	B
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.36	J	P	0.39	J	P	0.32	J	P
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U		0.32	U		1.3		
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.77	J	P	0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-78B-042315			MRC-MW-92C-042315			TB-042315		
SDG: 2066900R	LAB_ID	2066900002			2066900003			2066900001		
FRACTION: OV	SAMP_DATE	4/23/2015			4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	UR	C	58.9	UR	C	58.9	UR	C
2-BUTANONE		1.8	UJ	C	1.8	UJ	C	1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.42	U	B	0.57	U	B	0.56	J	P
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.34	J	P	0.33	J	P	0.31	U	
CIS-1,2-DICHLOROETHENE		0.45	J	P	0.79	J	P	0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-DUP02-042315			MRC-MW-58A-042315			MRC-MW-76A-042315			MRC-MW-76B-042315		
SDG: 2066900R	LAB_ID	2066900008			2066900007			2066900004			2066900005		
FRACTION: OV	SAMP_DATE	4/23/2015			4/23/2015			4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MRC-MW-58A-042315											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.31	J	P	0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		0.33	U		0.33	U		10.6		
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-78B-042315			MRC-MW-92C-042315			TB-042315		
SDG: 2066900R	LAB_ID	2066900002			2066900003			2066900001		
FRACTION: OV	SAMP_DATE	4/23/2015			4/23/2015			4/23/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		5.9			1			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900001** Date Collected: 4/23/2015 19:50 Matrix: Water

Sample ID: **TB-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 04:14	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:14	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:14	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:14	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 04:14	JPA	A
Bromomethane	0.56J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 04:14	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 04:14	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:14	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:14	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 04:14	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:14	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 04:14	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:14	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:14	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 04:14	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:14	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 04:14	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 04:14	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:14	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:14	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:14	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:14	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:14	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:14	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:14	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:14	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:14	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 04:14	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:14	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:14	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 04:14	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:14	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 04:14	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:14	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900001** Date Collected: 4/23/2015 19:50 Matrix: Water

Sample ID: **TB-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/29/15 04:14	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:14	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:14	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:14	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/29/15 04:14	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:14	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/29/15 04:14	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/29/15 04:14	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:14	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:14	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:14	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:14	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/29/15 04:14	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260C		4/29/15 04:14	JPA	A
4-Bromofluorobenzene (S)	98.1		%	79 - 114	SW846 8260C		4/29/15 04:14	JPA	A
Dibromofluoromethane (S)	99.7		%	78 - 116	SW846 8260C		4/29/15 04:14	JPA	A
Toluene-d8 (S)	101		%	76 - 127	SW846 8260C		4/29/15 04:14	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900002** Date Collected: 4/23/2015 09:15 Matrix: Water

Sample ID: **MRC-MW-78B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 04:17	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:17	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:17	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:17	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 04:17	JPA	A
Bromomethane	0.42J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 04:17	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 04:17	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:17	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:17	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 04:17	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 04:17	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:17	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 04:17	JPA	A
Chloromethane	0.34J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 04:17	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:17	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 04:17	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:17	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 04:17	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 04:17	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:17	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:17	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:17	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:17	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:17	JPA	A
cis-1,2-Dichloroethene	0.45J	J	ug/L	1.0	0.32	SW846 8260C		4/30/15 04:17	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:17	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 04:17	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:17	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:17	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 04:17	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 04:17	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:17	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 04:17	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 04:17	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 04:17	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 04:17	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900002** Date Collected: 4/23/2015 09:15 Matrix: Water

Sample ID: **MRC-MW-78B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:17	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 04:17	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 04:17	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:17	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 04:17	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 04:17	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 04:17	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 04:17	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 04:17	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 04:17	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:17	JPA	A
Trichloroethene	5.9		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:17	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:17	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 04:17	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:17	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 04:17	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260C			4/30/15 04:17	JPA	A
4-Bromofluorobenzene (S)	97.4		%	79 - 114	SW846 8260C			4/30/15 04:17	JPA	A
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260C			4/30/15 04:17	JPA	A
Toluene-d8 (S)	99.9		%	76 - 127	SW846 8260C			4/30/15 04:17	JPA	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Arsenic, Total	0.0021J	J	mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Barium, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Chromium, Total	0.0016J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Cobalt, Total	0.060		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Copper, Total	0.0090		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Iron, Total	4.0		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:02	SRT	D2
Lead, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Manganese, Total	1.6		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:04	MNP	D3
Molybdenum, Total	0.0027		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Nickel, Total	0.015		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900002** Date Collected: 4/23/2015 09:15 Matrix: Water

Sample ID: **MRC-MW-78B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1
Vanadium, Total	0.0037		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:08	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900003** Date Collected: 4/23/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-92C-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 04:34	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:34	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:34	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:34	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 04:34	JPA	A
Bromomethane	0.57J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 04:34	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 04:34	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:34	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:34	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 04:34	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 04:34	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:34	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 04:34	JPA	A
Chloromethane	0.33J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 04:34	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:34	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 04:34	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:34	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 04:34	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 04:34	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:34	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:34	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:34	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:34	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:34	JPA	A
cis-1,2-Dichloroethene	0.79J	J	ug/L	1.0	0.32	SW846 8260C		4/30/15 04:34	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:34	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 04:34	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:34	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:34	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 04:34	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 04:34	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:34	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 04:34	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 04:34	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 04:34	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 04:34	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900003** Date Collected: 4/23/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-92C-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:34	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 04:34	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 04:34	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:34	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 04:34	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 04:34	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 04:34	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 04:34	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 04:34	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 04:34	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:34	JPA	A
Trichloroethene	1.0		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:34	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:34	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 04:34	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:34	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 04:34	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260C			4/30/15 04:34	JPA	A
4-Bromofluorobenzene (S)	95.8		%	79 - 114	SW846 8260C			4/30/15 04:34	JPA	A
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260C			4/30/15 04:34	JPA	A
Toluene-d8 (S)	99		%	76 - 127	SW846 8260C			4/30/15 04:34	JPA	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Barium, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Beryllium, Total	0.00032J	J	mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Chromium, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Cobalt, Total	0.036		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Iron, Total	24.9		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:06	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Manganese, Total	1.3		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:05	MNP	D3
Molybdenum, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Nickel, Total	0.028		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900003** Date Collected: 4/23/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-92C-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:19	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900004** Date Collected: 4/23/2015 13:10 Matrix: Water

Sample ID: **MRC-MW-76A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	22.1		ug/L	10.0	3.1	SW846 8260C		4/30/15 04:51	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:51	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:51	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:51	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 04:51	JPA	A
Bromomethane	0.58J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 04:51	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 04:51	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 04:51	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:51	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 04:51	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 04:51	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:51	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 04:51	JPA	A
Chloromethane	0.39J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 04:51	JPA	A
Cyclohexane	0.77J	J	ug/L	1.0	0.29	SW846 8260C		4/30/15 04:51	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 04:51	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:51	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 04:51	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 04:51	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 04:51	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 04:51	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 04:51	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:51	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:51	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 04:51	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:51	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 04:51	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 04:51	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 04:51	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 04:51	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 04:51	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 04:51	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 04:51	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 04:51	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 04:51	JPA	A
Methyl cyclohexane	0.31J	J	ug/L	1.0	0.30	SW846 8260C		4/30/15 04:51	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900004** Date Collected: 4/23/2015 13:10 Matrix: Water

Sample ID: **MRC-MW-76A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:51	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 04:51	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 04:51	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:51	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 04:51	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 04:51	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 04:51	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 04:51	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 04:51	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 04:51	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:51	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:51	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 04:51	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 04:51	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 04:51	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 04:51	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133		SW846 8260C			4/30/15 04:51	JPA	A
4-Bromofluorobenzene (S)	93		%	79 - 114		SW846 8260C			4/30/15 04:51	JPA	A
Dibromofluoromethane (S)	104		%	78 - 116		SW846 8260C			4/30/15 04:51	JPA	A
Toluene-d8 (S)	97		%	76 - 127		SW846 8260C			4/30/15 04:51	JPA	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Barium, Total	0.098		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Beryllium, Total	0.012		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Cobalt, Total	0.51		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Copper, Total	0.0039J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Iron, Total	20.8		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:21	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Manganese, Total	25.3		mg/L	0.028	0.0095	SW846 6020A	4/27/15	AAM	4/28/15 05:04	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:06	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Nickel, Total	0.47		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900004** Date Collected: 4/23/2015 13:10 Matrix: Water

Sample ID: **MRC-MW-76A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	0.0029J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:23	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900005** Date Collected: 4/23/2015 12:05 Matrix: Water

Sample ID: **MRC-MW-76B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 05:08	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:08	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:08	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:08	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 05:08	JPA	A
Bromomethane	0.51J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 05:08	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 05:08	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:08	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:08	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 05:08	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 05:08	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:08	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 05:08	JPA	A
Chloromethane	0.32J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 05:08	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:08	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 05:08	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:08	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 05:08	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 05:08	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:08	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:08	JPA	A
1,1-Dichloroethane	1.7		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:08	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:08	JPA	A
1,1-Dichloroethene	1.2		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:08	JPA	A
cis-1,2-Dichloroethene	1.3		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:08	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:08	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 05:08	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:08	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:08	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 05:08	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 05:08	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:08	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 05:08	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 05:08	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 05:08	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 05:08	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900005** Date Collected: 4/23/2015 12:05 Matrix: Water

Sample ID: **MRC-MW-76B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:08	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 05:08	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 05:08	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:08	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 05:08	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 05:08	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 05:08	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 05:08	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 05:08	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 05:08	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:08	JPA	A
Trichloroethene	10.6		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:08	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:08	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 05:08	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:08	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 05:08	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260C			4/30/15 05:08	JPA	A
4-Bromofluorobenzene (S)	93.8		%	79 - 114	SW846 8260C			4/30/15 05:08	JPA	A
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260C			4/30/15 05:08	JPA	A
Toluene-d8 (S)	96.3		%	76 - 127	SW846 8260C			4/30/15 05:08	JPA	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Barium, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Beryllium, Total	0.0015		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Cobalt, Total	0.19		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Iron, Total	20.1		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:24	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Manganese, Total	7.5		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:07	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Nickel, Total	0.27		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900005** Date Collected: 4/23/2015 12:05 Matrix: Water

Sample ID: **MRC-MW-76B-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:45	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900006** Date Collected: 4/23/2015 12:03 Matrix: Water

Sample ID: **MRC-MW-26A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Barium, Total	0.44		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Beryllium, Total	0.016		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Cobalt, Total	0.41		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Iron, Total	30.1		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:33	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Manganese, Total	8.7		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:08	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Nickel, Total	0.21		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:49	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900007** Date Collected: 4/23/2015 12:03 Matrix: Water

Sample ID: **MRC-MW-58A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 05:25	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:25	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:25	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:25	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 05:25	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		4/30/15 05:25	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 05:25	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:25	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:25	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 05:25	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 05:25	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:25	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 05:25	JPA	A
Chloromethane	0.36J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 05:25	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:25	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 05:25	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:25	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 05:25	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 05:25	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:25	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:25	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:25	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:25	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:25	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:25	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:25	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 05:25	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:25	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:25	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 05:25	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 05:25	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:25	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 05:25	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 05:25	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 05:25	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 05:25	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900007** Date Collected: 4/23/2015 12:03 Matrix: Water

Sample ID: **MRC-MW-58A-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:25	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 05:25	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 05:25	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:25	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 05:25	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 05:25	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 05:25	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 05:25	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 05:25	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 05:25	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:25	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:25	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:25	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 05:25	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:25	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 05:25	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133		SW846 8260C			4/30/15 05:25	JPA	A
4-Bromofluorobenzene (S)	94.6		%	79 - 114		SW846 8260C			4/30/15 05:25	JPA	A
Dibromofluoromethane (S)	103		%	78 - 116		SW846 8260C			4/30/15 05:25	JPA	A
Toluene-d8 (S)	96.6		%	76 - 127		SW846 8260C			4/30/15 05:25	JPA	A
SEMIVOLATILES											
1,4-Dioxane	0.38		ug/L	0.070	0.014	EPA 522	5/1/15	JEK	5/2/15 03:13	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	85.1		%	70 - 130		EPA 522	5/1/15	JEK	5/2/15 03:13	DHF	E

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900008** Date Collected: 4/23/2015 00:00 Matrix: Water

Sample ID: **MRC-DUP02-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 05:42	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:42	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:42	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:42	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 05:42	JPA	A
Bromomethane	0.55J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 05:42	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 05:42	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:42	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:42	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 05:42	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 05:42	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:42	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 05:42	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:42	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:42	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 05:42	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:42	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 05:42	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 05:42	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:42	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:42	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:42	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:42	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:42	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:42	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:42	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 05:42	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:42	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:42	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 05:42	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 05:42	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:42	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 05:42	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 05:42	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 05:42	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 05:42	JPA	A

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ANALYTICAL RESULTS

Workorder: 2066900 TMM022|112ICO6247

Lab ID: **2066900008** Date Collected: 4/23/2015 00:00 Matrix: Water

Sample ID: **MRC-DUP02-042315** Date Received: 4/23/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:42	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 05:42	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 05:42	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:42	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 05:42	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 05:42	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 05:42	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 05:42	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 05:42	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 05:42	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:42	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:42	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:42	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 05:42	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:42	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 05:42	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133		SW846 8260C			4/30/15 05:42	JPA	A
4-Bromofluorobenzene (S)	93.2		%	79 - 114		SW846 8260C			4/30/15 05:42	JPA	A
Dibromofluoromethane (S)	107		%	78 - 116		SW846 8260C			4/30/15 05:42	JPA	A
Toluene-d8 (S)	96.9		%	76 - 127		SW846 8260C			4/30/15 05:42	JPA	A
SEMIVOLATILES											
1,4-Dioxane	0.36		ug/L	0.070	0.014	EPA 522	5/1/15	JEK	5/2/15 03:37	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	92.4		%	70 - 130		EPA 522	5/1/15	JEK	5/2/15 03:37	DHF	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-022

Sample Management

This report contains the results of the analysis of five (5) ground water samples collected on April 23, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 23, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Seven (7) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2170306, bromomethane was detected at 0.52J µg/L; carbon disulfide was detected at 0.38J µg/L; 1,4-dichlorobenzene was detected at 0.27J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Two (2) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was prepared on sample, 2066900002, in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike and matrix spike duplicate identified as 2169366 and 2169367 were prepared and analyzed on sample 2066900005 (MRC-MW-76B-042315), in this deliverable group. All MS/MSD recoveries and their associated RPDs were within method control limits, except the following;

- The iron analyte concentration in the sample were greater than four times the concentration of our spiking solution. For this reason, spike recoveries were not calculated (NSC).

Total Mercury in Water by EPA Method 7470A

Sample handling. Five (5) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

D

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER Nº 128487

2066900

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME
112IC06247	MRC-GW 2015	Tony Apanavage	301 528-3021	ALS

SAMPLERS (SIGNATURE)	FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Walt Pr	Walt Pryon	301 921-3914	
	CARRIER/WAYBILL NUMBER		CITY, STATE

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs	Total metals	1,4 Dioxane	COMMENTS
4-23	—	TB-042315	TB	—	—	QC	G	3				
	0915	MRC-MW-78B-042315	MW78B	—	—	GW		4	X	X		
	1035	MRC-MW-92C-042315	MW92C	—	—			4	X	X		
	1310	MRC-MW-76A-042315	MW76A	—	—			4	X	X		
	1205	MRC-MW-76B-042315	MW76B	—	—			4	X	X		
	1203	MRC-MW-26A-042315	MW26A	—	—			1		X		
	1506	MRC-MW-58A-042315	MW58A	—	—			5	X3		X2	
	0000	MRC-Dupoz-042315	Dupoz					5	X3		X2	
		RML 4/24										
		623										

	Y	N	Initials
Custody Seals Present?			RML
(if present) Seals Intact?			
Received on Ice?			
COC/Lbls Complete			
Cont in Good Cond?			
Correct Containers?			
Correct Samp Vol?			
Correct Preservation?			
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Thermo ID: 291
Ship Carrier
FedEx UPS
DHL
Tracking #:

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Walt Pr	4-23-15		1. RECEIVED BY [signature] ALS	4/23/15	1544
2. RELINQUISHED BY [signature] ALS	4/23/15	1545	2. RECEIVED BY Harcomp	4/23	1700
3. RELINQUISHED BY Harcomp 4/23 1950	4/23	1950	3. RECEIVED BY SES	4/23	1950

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

Monday, May 04, 2015 4:25:38 PM
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ALS

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2066900 TMM022|112ICO6247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2066900001	TB-042315	Water	4/23/2015 19:50	4/23/2015 19:50	Collected by Client
2066900002	MRC-MW-78B-042315	Water	4/23/2015 09:15	4/23/2015 19:50	Collected by Client
2066900003	MRC-MW-92C-042315	Water	4/23/2015 10:35	4/23/2015 19:50	Collected by Client
2066900004	MRC-MW-76A-042315	Water	4/23/2015 13:10	4/23/2015 19:50	Collected by Client
2066900005	MRC-MW-76B-042315	Water	4/23/2015 12:05	4/23/2015 19:50	Collected by Client
2066900006	MRC-MW-26A-042315	Water	4/23/2015 12:03	4/23/2015 19:50	Collected by Client
2066900007	MRC-MW-58A-042315	Water	4/23/2015 12:03	4/23/2015 19:50	Collected by Client
2066900008	MRC-DUP02-042315	Water	4/23/2015 00:00	4/23/2015 19:50	Collected by Client

Field Duplicate Precision

ANALYTE	MRC-MW-DUP02-042315	MRC-MW-58A-042315	RPD	DIFFERENCE
CHLOROMETHANE	ND	0.36	200.00	0.05

Field Duplicate Precision

ANALYTE	MRC-MW-DUP02-042315	MRC-MW-58A-042315	RPD	DIFFERENCE
1,4-DIOXANE	0.36	0.38	5.41	0.02

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-022

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170306(MB)	2170306	15042863.D	4/29/2015	03:05
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22
TB-042315	2066900001	15042867.D	4/29/2015	04:14

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170306

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-022

Lab File ID: 15042863.D Lab Sample ID: 2170306

Date Analyzed: 4/29/2015 Time Analyzed: 03:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170307(LCS)	2170307	15042864.D	03:22
TB-042315	2066900001	15042867.D	04:14

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.52	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.38	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.27	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-022

Lab File ID: 15043000.D BFB Injection Date: 4/30/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	81.0
175	5.0 - 9.0% of mass 174	5.8 (7.2) 1
176	95.0 - 101.0% of mass 174	79.5 (98.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15043002.D	4/30/2015	01:48
2170933(MB)	2170933	15043005.D	4/30/2015	02:50
2170934(LCS)	2170934	15043006.D	4/30/2015	03:08
MRC-MW-78B-042315	2066900002	15043010.D	4/30/2015	04:17
MRC-MW-92C-042315	2066900003	15043011.D	4/30/2015	04:34
MRC-MW-76A-042315	2066900004	15043012.D	4/30/2015	04:51
MRC-MW-76B-042315	2066900005	15043013.D	4/30/2015	05:08
MRC-MW-58A-042315	2066900007	15043014.D	4/30/2015	05:25
MRC-DUP02-042315	2066900008	15043015.D	4/30/2015	05:42

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.2	100.0	Q
Acrolein	0.0581	0.0524			-9.9	100.0	A
Acrylonitrile	0.1086	0.1034			-4.8	100.0	A
Acetonitrile	250		247		-1.1	100.0	Q
tert-Amyl Ethylether	50.0000		43.2377		-13.5	100.0	Q
tert-Amyl methyl ether	50.0000		43.0118		-14.0	100.0	Q
tert-Amyl Alcohol	250		207		-17.3	100.0	Q
Benzene	1.4258	1.3455			-5.6	100.0	A
Benzyl Chloride	50.0000		38.9773		-22.0	100.0	Q
Bromobenzene	0.9609	0.9127			-5.0	100.0	A
Bromochloromethane	50.0000		48.8843		-2.2	100.0	Q
Bromodichloromethane	0.4399	0.4168			-5.3	100.0	A
Bromoform	50.0000		41.9449	0.100	-16.1	100.0	Q
Bromomethane	50.0000		59.3716		18.7	100.0	Q
2-Butanone	250		195		-22.0	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0221			-13.3	100.0	A
tert-Butylbenzene	50.0000		45.1641		-9.7	100.0	Q
n-Butylbenzene	50.0000		44.1110		-11.8	100.0	Q
sec-Butylbenzene	50.0000		45.2798		-9.4	100.0	Q
Carbon Disulfide	50.0000		46.4227		-7.2	100.0	Q
Carbon Tetrachloride	0.4297	0.4103			-4.5	100.0	A
Chloroacetonitrile	250		212		-15.1	100.0	Q
Chlorobenzene	2.3877	2.0948		0.300	-12.3	100.0	A
1-Chlorobutane	50.0000		47.2735		-5.5	100.0	Q
Chlorodibromomethane	50.0000		43.8207		-12.4	100.0	Q
Chloroethane	50.0000		50.8149		1.6	100.0	Q
2-Chloroethylvinyl ether	50.0000		36.5947		-26.8	100.0	Q
Chloroform	50.0000		49.5065		-1.0	20.0	Q
1-Chlorohexane	50.0000		43.5800		-12.8	100.0	Q
Chloromethane	50.0000		54.8450	0.100	9.7	100.0	Q
Chloroprene	0.4876	0.4827			-1.0	100.0	A
3-Chloro-1-propene	50.0000		45.8975		-8.2	100.0	Q
o-Chlorotoluene	50.0000		45.5015		-9.0	100.0	Q
p-Chlorotoluene	50.0000		45.2425		-9.5	100.0	Q
Cyclohexane	0.4544	0.4665			2.7	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.5241		-17.0	100.0	Q
1,2-Dibromoethane	0.6562	0.5552			-15.4	100.0	A
Dibromomethane	0.2114	0.1903			-10.0	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.1969			-13.7	100.0	A
1,2-Dichlorobenzene	1.7893	1.6318			-8.8	100.0	A
1,3-Dichlorobenzene	1.8566	1.7159			-7.6	100.0	A
1,4-Dichlorobenzene	1.9931	1.7805			-10.7	100.0	A
Dichlorodifluoromethane	50.0000		52.9865		6.0	100.0	Q
1,1-Dichloroethane	50.0000		50.7649	0.100	1.5	100.0	Q
1,2-Dichloroethene, Total	100		96.7581		-3.2	100.0	Q
1,2-Dichloroethane	50.0000		47.6995		-4.6	100.0	Q
1,1-Dichloroethene	50.0000		48.6981		-2.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.4385			-5.5	100.0	A
trans-1,2-Dichloroethene	50.0000		49.5179		-1.0	100.0	Q
Dichlorofluoromethane	50.0000		48.7129		-2.6	100.0	Q
1,1-Dichloro-2-Propanone	250		214		-14.2	100.0	Q
2,2-Dichloropropane	0.3930	0.3391			-13.7	100.0	A
1,3-Dichloropropane	50.0000		44.5618		-10.9	100.0	Q
1,2-Dichloropropane	0.3530	0.3317			-6.0	20.0	A
1,1-Dichloropropene	0.4527	0.4426			-2.2	100.0	A
cis-1,3-Dichloropropene	50.0000		42.8517		-14.3	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.3453		-13.3	100.0	Q
1,3-Dichloropropene, Total	100		86.1970		-13.8	100.0	Q
Diisobutylene	50.0000		45.7096		-8.6	100.0	Q
Diisopropyl ether	50.0000		48.8422		-2.3	100.0	Q
1,4-Dioxane	1250		1047		-16.3	100.0	Q
Ethyl Acetate	0.2675	0.2401			-10.2	100.0	A
Ethyl ether	50.0000		46.3510		-7.3	100.0	Q
Ethyl Methacrylate	50.0000		41.4696		-17.1	100.0	Q
Ethyl tert-butyl ether	0.8344	0.7905			-5.3	100.0	A
Ethylbenzene	50.0000		45.7960		-8.4	20.0	Q
Freon 113	50.0000		47.7930		-4.4	100.0	Q
Heptane	50.0000		41.9493		-16.1	100.0	Q
Hexachlorobutadiene	50.0000		43.6456		-12.7	100.0	Q
Hexachloroethane	50.0000		44.2898		-11.4	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		46.3563		-7.3	100.0	Q
2-Hexanone	250		210		-16.1	100.0	Q
Iodomethane	50.0000		64.6925		29.4	100.0	Q
Isobutyl alcohol	500		416		-16.8	100.0	Q
Isopropyl Alcohol	250		227		-9.3	100.0	Q
Isopropylbenzene	50.0000		44.5488		-10.9	100.0	Q
p-Isopropyltoluene	50.0000		44.3574		-11.3	100.0	Q
Methyl acetate	50.0000		47.9380		-4.1	100.0	Q
Methyl acrylate	0.2529	0.2324			-8.1	100.0	A
Methacrylonitrile	50.0000		46.5053		-7.0	100.0	Q
Methyl cyclohexane	1.1020	1.0155			-7.8	100.0	A
Methyl methacrylate	50.0000		42.5022		-15.0	100.0	Q
Methyl t-Butyl Ether	0.8449	0.7340			-13.1	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		214		-14.3	100.0	Q
Methylene Chloride	50.0000		50.9288		1.9	100.0	Q
Naphthalene	50.0000		38.4048		-23.2	100.0	Q
Nitrobenzene	500		372		-25.7	100.0	Q
2-Nitropropane	250		225		-10.0	100.0	Q
Octane	50.0000		39.9334		-20.1	100.0	Q
Pentachloroethane	0.6997	0.6337			-9.4	100.0	A
Pentane	50.0000		45.4640		-9.1	100.0	Q
n-Propanol	500		515		3.1	100.0	Q
Propionitrile	0.0436	0.0401			-8.0	100.0	A
n-Propylbenzene	50.0000		45.6385		-8.7	100.0	Q
Styrene	50.0000		45.0324		-9.9	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6929			-14.0	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.2088	0.300	-11.6	100.0	Q
Tetrachloroethene	50.0000		46.5844		-6.8	100.0	Q
Tetrahydrofuran	250		219		-12.2	100.0	Q
Toluene	50.0000		45.2579		-9.5	20.0	Q
Total Xylenes	150		134		-10.9	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.5426		-16.9	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.4271		-19.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4758			-7.7	100.0	A
1,1,2-Trichloroethane	50.0000		45.5646		-8.9	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-022

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		47.0150		-6.0	100.0	Q
Trichlorofluoromethane	50.0000		50.1777		0.4	100.0	Q
1,2,3-Trichloropropane	50.0000		44.2524		-11.5	100.0	Q
1,2,4-Trimethylbenzene	50.0000		45.2673		-9.5	100.0	Q
1,3,5-Trimethylbenzene	50.0000		45.7632		-8.5	100.0	Q
Vinyl Acetate	50.0000		46.1661		-7.7	100.0	Q
Vinyl Chloride	50.0000		49.0546		-1.9	20.0	Q
o-Xylene	50.0000		42.7290		-14.5	100.0	L
mp-Xylene	100		90.9349		-9.1	100.0	Q
4-Bromofluorobenzene	50.0000		47.6456		-4.7	100.0	Q
Dibromofluoromethane	50.0000		49.2453		-1.5	100.0	Q
1,2-Dichloroethane-d4	50.0000		48.2810		-3.4	100.0	Q
Toluene-d8	2.4192	2.2464			-7.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170933

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-022

Lab File ID: 15043005.D Lab Sample ID: 2170933

Date Analyzed: 4/30/2015 Time Analyzed: 02:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170934(LCS)	2170934	15043006.D	03:08
MRC-MW-78B-042315	2066900002	15043010.D	04:17
MRC-MW-92C-042315	2066900003	15043011.D	04:34
MRC-MW-76A-042315	2066900004	15043012.D	04:51
MRC-MW-76B-042315	2066900005	15043013.D	05:08
MRC-MW-58A-042315	2066900007	15043014.D	05:25
MRC-DUP02-042315	2066900008	15043015.D	05:42

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-022

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2170306(MB)	97.6	98.9	102	101	0
02	2170307(LCS)	96.5	94.4	94.2	91.3	0
03	TB-042315	98.1	99.7	103	101	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-022

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
04	2170933(MB)	89.5	101	106	97.2	0
05	2170934(LCS)	90.2	93.0	94.1	87.5	0
06	MRC-MW-78B-042315	97.4	104	113	99.9	0
07	MRC-MW-92C-042315	95.8	105	109	99.0	0
08	MRC-MW-76A-042315	93.0	104	111	97.0	0
09	MRC-MW-76B-042315	93.8	105	111	96.3	0
10	MRC-MW-58A-042315	94.6	103	111	96.6	0
11	MRC-DUP02-042315	93.2	107	112	96.9	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.9	99.9	(40-151)
Benzene	20.0		19.2	96.2	(80-124)
Bromochloromethane	20.0		19.1	95.7	(73-117)
Bromodichloromethane	20.0		18.4	92	(79-126)
Bromoform	20.0		16.1	80.6	(70-123)
Bromomethane	20.0		23.0	115	(45-148)
2-Butanone	100		88.2	88.2	(50-152)
Carbon Disulfide	20.0		16.2	81.1	(57-131)
Carbon Tetrachloride	20.0		18.9	94.3	(62-132)
Chlorobenzene	20.0		18.1	90.4	(85-117)
Chlorodibromomethane	20.0		17.1	85.6	(77-122)
Chloroethane	20.0		18.8	94.2	(51-142)
Chloroform	20.0		19.9	99.7	(78-122)
Chloromethane	20.0		23.4	117	(38-156)
Cyclohexane	20.0		19.9	99.3	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.2	81.2	(59-133)
1,2-Dibromoethane	20.0		17.4	87.1	(80-124)
1,2-Dichlorobenzene	20.0		18.1	90.5	(82-118)
1,3-Dichlorobenzene	20.0		19.0	95	(81-118)
1,4-Dichlorobenzene	20.0		18.6	92.9	(81-116)
Dichlorodifluoromethane	20.0		20.0	99.9	(17-166)
1,1-Dichloroethane	20.0		19.8	99	(78-124)
1,2-Dichloroethane	20.0		19.8	99.1	(70-133)
1,1-Dichloroethene	20.0		18.8	94.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.3	91.5	(78-125)
trans-1,2-Dichloroethen	20.0		20.6	103	(71-122)
1,2-Dichloropropane	20.0		18.8	94	(81-127)
cis-1,3-Dichloropropene	20.0		16.6	83.1	(81-121)
trans-1,3-Dichloroprope	20.0		17.1	85.7	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		390	78	(1-280)
Ethylbenzene	20.0		17.8	89.2	(80-124)
Freon 113	20.0		19.5	97.5	(50-130)
2-Hexanone	100		79.9	79.9	(65-154)
Isopropylbenzene	20.0		16.1	80.4	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.2	90.9	(70-130)
Methyl t-Butyl Ether	20.0		17.5	87.7	(69-115)
4-Methyl-2-Pentanone(MI	100		81.9	81.9	(71-146)
Methylene Chloride	20.0		20.6	103	(76-121)
Styrene	20.0		17.0	85	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.9	94.5	(74-135)
Tetrachloroethene	20.0		19.3	96.3	(72-124)
Toluene	20.0		18.3	91.4	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.9	69.5	(67-123)
1,1,1-Trichloroethane	20.0		18.9	94.3	(66-130)
1,1,2-Trichloroethane	20.0		19.1	95.7	(82-126)
Trichloroethene	20.0		19.3	96.7	(77-124)
Trichlorofluoromethane	20.0		19.4	96.8	(38-123)
Vinyl Chloride	20.0		19.0	94.8	(27-138)
o-Xylene	20.0		16.1	80.4	(79-124)
mp-Xylene	40.0		34.7	86.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170306(MB)	281749	5.912	230024	7.686	712696	3.910
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910
TB-042315	258355	5.913	200789	7.686	661553	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-022

Lab File ID: 15043002.D Date Analyzed: 4/30/2015

Instrument ID: ms15.i Time Analyzed: 01:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	377428	5.913	347722	7.686	793589	3.910
UPPER LIMIT	754856	6.413	695444	8.186	1587178	4.410
LOWER LIMIT	188714	5.413	173861	7.186	396795	3.410
SAMPLE NO.						
1800	377428	5.913	347722	7.686	793589	3.910
2170933(MB)	241882	5.913	192305	7.686	624719	3.910
2170934(LCS)	356190	5.913	320195	7.686	761046	3.910
MRC-MW-78B-042315	236943	5.913	181320	7.686	598676	3.910
MRC-MW-92C-042315	233226	5.913	180688	7.686	595478	3.910
MRC-MW-76A-042315	237521	5.913	184394	7.686	592610	3.910
MRC-MW-76B-042315	237334	5.912	181898	7.686	588229	3.910
MRC-MW-58A-042315	234977	5.913	178111	7.686	592806	3.910
MRC-DUP02-042315	233347	5.913	178324	7.686	575131	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Instrument ID: MS12 Calibration Date: 05/01/15 Time: 1840

Lab File ID: 12050101 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.09e-003	3.5e-003	1.0918383	0.00001	16.86	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6242356	0.6242356	0.00001	-12.33	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Instrument ID: MS12 Calibration Date: 05/02/15 Time: 0154

Lab File ID: 12050115 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.56e-002	5.e-002	1.4000297	0.00001	-8.80	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6276955	0.6276955	0.00001	-11.84	30.00	AVRG

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/01/15

Lab File ID (Standard): 12050101 Time Analyzed: 1840

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	47261	6.36				
	UPPER LIMIT	61439	6.86				
	LOWER LIMIT	33083	5.86				
	SAMPLE NO.						
01	2172032	51149	6.36				
02	2172033LCSLO	51470	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/02/15

Lab File ID (Standard): 12050115 Time Analyzed: 0154

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	47069	6.36				
	UPPER LIMIT	61190	6.86				
	LOWER LIMIT	32948	5.86				
	SAMPLE NO.						
01	MRC-MW-58A-0	51675	6.36				
02	MRC-DUP02-04	51057	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/01/15	1840	8.36			
02	2172032	2172032	05/01/15	1920	8.36			
03	2172033LCSLO	2172033	05/01/15	2042	8.36			
04	MIDCHECK-5	MIDCHECK-5	05/02/15	0154	8.36			
05	MRC-MW-58A-0	2066900007	05/02/15	0313	8.36			
06	MRC-DUP02-04	2066900008	05/02/15	0337	8.36			
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172032

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Lab File ID: 12050102A Lab Sample ID: 2172032

Instrument ID: MS12 Date Extracted: 05/01/15

Matrix: (soil/water) WATER Date Analyzed: 05/01/15

Level:(low/med) LOW Time Analyzed: 1920

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172033LCSLO	2172033	12050103	05/01/15
02	MRC-MW-58A-0	2066900007	12050118	05/02/15
03	MRC-DUP02-04	2066900008	12050119	05/02/15
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2172032

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Matrix: (soil/water) WATER Lab Sample ID: 2172032

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050102A

Level: (low/med) LOW Date Received: 05/01/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/01/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/01/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172032	83								0
02	2172033LCSLO	86								0
03	MRC-MW-58A-0	85								0
04	MRC-DUP02-04	92								0
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
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27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM022

Matrix Spike - Sample No.: 2172033LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0599917	86	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

6020 3015

- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-022 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2066900002	MRC-MW-78B-042315	
2066900002S	MRC-MW-78B-042315S	Matrix Spike
2066900002SD	MRC-MW-78B-042315SD	Matrix Spike Duplicate
2066900003	MRC-MW-92C-042315	
2066900004	MRC-MW-76A-042315	
2066900005	MRC-MW-76B-042315	
2066900006	MRC-MW-26A-042315	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0024																										
BLK	1.00	0028			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0032			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0035			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0039			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0043			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0046			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0050			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0054			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0058			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0101			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0105			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0109																										
ZZZZZZ	1.00	0113																										
ZZZZZZ	1.00	0116																										
ZZZZZZ	1.00	0120																										
2169342	1.00	0124			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2169343	1.00	0127			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0131																										
ZZZZZZ	1.00	0135																										
ZZZZZZ	1.00	0139																										
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
ZZZZZZ	1.00	0150																										
CCV1	1.00	0153			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0157			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0201			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0204																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	1.00	0212																										
ZZZZZZ	1.00	0216																										
ZZZZZZ	1.00	0219																										
ZZZZZZ	1.00	0223																										
ZZZZZZ	1.00	0227																										
ZZZZZZ	1.00	0230																										
ZZZZZZ	1.00	0234																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0238																										
ZZZZZZ	1.00	0241																										
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0249																										
ZZZZZZ	1.00	0253																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0300																										
ZZZZZZ	5.00	0304																										
ZZZZZZ	5.00	0308																										
ZZZZZZ	5.00	0311																										
ZZZZZZ	20.00	0315																										
ZZZZZZ	1.00	0319																										
ZZZZZZ	1.00	0322																										
ZZZZZZ	1.00	0326																										
ZZZZZZ	1.00	0330																										
ZZZZZZ	1.00	0334																										
CCB3	1.00	0337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0341			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV5	1.00	0345			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0349																										
ZZZZZZ	1.00	0352																										
ZZZZZZ	1.00	0356																										
ZZZZZZ	1.00	0400																										
ZZZZZZ	1.00	0404																										
2066900002	1.00	0408			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066900002S	1.00	0412			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066900002SD	1.00	0415			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066900003	1.00	0419			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066900004	1.00	0423			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	0427																										
ZZZZZZ	1.00	0430																										
CCB5	1.00	0434			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV7	1.00	0441			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2066900005	1.00	0445			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2066900006	1.00	0449			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0453																										
ZZZZZZ	1.00	0456																										
ZZZZZZ	1.00	0500																										
2066900004	5.00	0504															X											
ZZZZZZ	1.00	0508																										
ZZZZZZ	1.00	0512																										
ZZZZZZ	1.00	0515																										
ZZZZZZ	5.00	0519																										
CCV8	1.00	0523			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	0526			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0530			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0534																										
ZZZZZZ	1.00	0538																										
ZZZZZZ	1.00	0541																										
ZZZZZZ	1.00	0545																										
ZZZZZZ	1.00	0549																										
ZZZZZZ	1.00	0553																										
ZZZZZZ	5.00	0556																										
ZZZZZZ	1.00	0600																										
ZZZZZZ	1.00	0604																										
ZZZZZZ	1.00	0608																										
ZZZZZZ	1.00	0611																										
ZZZZZZ	1.00	0615																										
ZZZZZZ	1.00	0619																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM022|112ICO6247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-022

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	00:24																										
BLK	1.00	00:28					X																					
STANDARD 1	1.00	00:32					X																					
STANDARD 2	1.00	00:35					X																					
STANDARD 3	1.00	00:39					X																					
STANDARD 4	1.00	00:43					X																					
STANDARD 5	1.00	00:46					X																					
ICV	1.00	00:50					X																					
ICB1	1.00	00:54					X																					
LLICV	1.00	00:58					X																					
ICS-A1	1.00	01:01					X																					
ICS-AB1	1.00	01:05					X																					
ZZZZZZ	1.00	01:09																										
ZZZZZZ	1.00	01:13																										
ZZZZZZ	1.00	01:16																										
ZZZZZZ	1.00	01:20																										
2169342	1.00	01:24					X																					
2169343	1.00	01:27					X																					
ZZZZZZ	1.00	01:31																										
ZZZZZZ	1.00	01:35																										
ZZZZZZ	1.00	01:39																										
ZZZZZZ	1.00	01:42																										
ZZZZZZ	1.00	01:46																										
ZZZZZZ	1.00	01:50																										
CCV1	1.00	01:53					X																					
CCB1	1.00	01:57					X																					
LLCCV	1.00	02:01					X																					
ZZZZZZ	1.00	02:04																										
ZZZZZZ	1.00	02:08																										
ZZZZZZ	1.00	02:12																										
ZZZZZZ	1.00	02:16																										

6020 3015

-14-

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM022|112ICO6247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-022

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	02:19																										
ZZZZZZ	1.00	02:23																										
ZZZZZZ	1.00	02:27																										
ZZZZZZ	1.00	02:30																										
ZZZZZZ	1.00	02:34																										
ZZZZZZ	1.00	02:38																										
ZZZZZZ	1.00	02:41																										
ZZZZZZ	1.00	02:45																										
ZZZZZZ	1.00	02:49																										
ZZZZZZ	1.00	02:53																										
ZZZZZZ	1.00	02:56																										
ZZZZZZ	1.00	03:00																										
ZZZZZZ	5.00	03:04																										
ZZZZZZ	5.00	03:08																										
ZZZZZZ	5.00	03:11																										
ZZZZZZ	20.00	03:15																										
ZZZZZZ	1.00	03:19																										
ZZZZZZ	1.00	03:22																										
ZZZZZZ	1.00	03:26																										
ZZZZZZ	1.00	03:30																										
ZZZZZZ	1.00	03:34																										
CCB3	1.00	03:37					X																					
LLCCV	1.00	03:41					X																					
CCV5	1.00	03:45					X																					
ZZZZZZ	1.00	03:49																										
ZZZZZZ	1.00	03:52																										
ZZZZZZ	1.00	03:56																										
ZZZZZZ	1.00	04:00																										
ZZZZZZ	1.00	04:04																										
2066900002	1.00	04:08					X																					
2066900002S	1.00	04:12					X																					

6020 3015

-14-

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM022|112ICO6247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-022

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
2066900002SD	1.00	04:15					X																					
2066900003	1.00	04:19					X																					
2066900004	1.00	04:23					X																					
ZZZZZZ	1.00	04:27																										
ZZZZZZ	1.00	04:30																										
CCB5	1.00	04:34					X																					
LLCCV	1.00	04:38					X																					
CCV7	1.00	04:41					X																					
2066900005	1.00	04:45					X																					
2066900006	1.00	04:49					X																					
ZZZZZZ	1.00	04:53																										
ZZZZZZ	1.00	04:56																										
ZZZZZZ	1.00	05:00																										
2066900004	5.00	05:04																										
ZZZZZZ	1.00	05:08																										
ZZZZZZ	1.00	05:12																										
ZZZZZZ	1.00	05:15																										
ZZZZZZ	5.00	05:19																										
CCV8	1.00	05:23					X																					
CCB6	1.00	05:26					X																					
LLCCV	1.00	05:30					X																					
ZZZZZZ	1.00	05:34																										
ZZZZZZ	1.00	05:38																										
ZZZZZZ	1.00	05:41																										
ZZZZZZ	1.00	05:45																										
ZZZZZZ	1.00	05:49																										
ZZZZZZ	1.00	05:53																										
ZZZZZZ	5.00	05:56																										
ZZZZZZ	1.00	06:00																										
ZZZZZZ	1.00	06:04																										
ZZZZZZ	1.00	06:08																										

6020 3015

-14-

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM022|112ICO6247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-022

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	06:11																									
ZZZZZZ	1.00	06:15																									
ZZZZZZ	1.00	06:19																									

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.0999	0.1000	100		90 - 110	M	4/28/2015	00:50	A042815B 0
	Arsenic	0.0989	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	00:50	A042815B 0
	Beryllium	0.0968	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cadmium	0.0936	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Chromium	0.0969	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cobalt	0.0971	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Copper	0.0967	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Lead	0.0972	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Manganese	0.0975	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Molybdenum	0.0982	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Selenium	0.0992	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Silver	0.0944	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Thallium	0.0953	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Vanadium	0.0974	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	00:58	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/28/2015	00:58	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	00:58	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Manganese	0.0048	0.0050	96		70 - 130	M	4/28/2015	00:58	A042815B 0
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	00:58	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1009	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Arsenic	0.0994	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Barium	0.0971	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Beryllium	0.0943	0.1000	94		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cadmium	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Chromium	0.0991	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cobalt	0.0998	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Copper	0.0996	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Lead	0.0992	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Manganese	0.1007	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Molybdenum	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Nickel	0.0969	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Selenium	0.0979	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Silver	0.0955	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Thallium	0.0957	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Vanadium	0.0993	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	02:01	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Silver	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	02:01	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Arsenic	0.0028	0.0030	93		70 - 130	M	4/28/2015	03:41	A042815B 0
	Barium	0.0045	0.0050	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Chromium	0.0016	0.0020	80		70 - 130	M	4/28/2015	03:41	A042815B 0
	Cobalt	0.0042	0.0050	84		70 - 130	M	4/28/2015	03:41	A042815B 0
	Copper	0.0042	0.0050	84		70 - 130	M	4/28/2015	03:41	A042815B 0
	Lead	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Manganese	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	4/28/2015	03:41	A042815B 0
	Nickel	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Selenium	0.0044	0.0050	88		70 - 130	M	4/28/2015	03:41	A042815B 0
	Silver	0.0017	0.0020	85		70 - 130	M	4/28/2015	03:41	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	03:41	A042815B 0
	Vanadium	0.0016	0.0020	80		70 - 130	M	4/28/2015	03:41	A042815B 0
CCV										
	Antimony	0.1004	0.1000	100		90 - 110	M	4/28/2015	03:45	A042815B 0
	Arsenic	0.0985	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Barium	0.0972	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Beryllium	0.0946	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Cadmium	0.0935	0.1000	94		90 - 110	M	4/28/2015	03:45	A042815B 0
	Chromium	0.0983	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Cobalt	0.0975	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Copper	0.0973	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Lead	0.0977	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Manganese	0.0990	0.1000	99		90 - 110	M	4/28/2015	03:45	A042815B 0
	Molybdenum	0.0976	0.1000	98		90 - 110	M	4/28/2015	03:45	A042815B 0
	Nickel	0.0944	0.1000	94		90 - 110	M	4/28/2015	03:45	A042815B 0
	Selenium	0.0974	0.1000	97		90 - 110	M	4/28/2015	03:45	A042815B 0
	Silver	0.0946	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Thallium	0.0948	0.1000	95		90 - 110	M	4/28/2015	03:45	A042815B 0
	Vanadium	0.0989	0.1000	99		90 - 110	M	4/28/2015	03:45	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	04:38	A042815B 0
	Barium	0.0050	0.0050	100		70 - 130	M	4/28/2015	04:38	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Chromium	0.0017	0.0020	85		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Copper	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Selenium	0.0053	0.0050	106		70 - 130	M	4/28/2015	04:38	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	04:38	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
CCV										
	Antimony	0.0994	0.1000	99		90 - 110	M	4/28/2015	04:41	A042815B 0
	Arsenic	0.0976	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Beryllium	0.0909	0.1000	91		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cadmium	0.0955	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Chromium	0.0974	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cobalt	0.0967	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Copper	0.0972	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Lead	0.0973	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Manganese	0.0995	0.1000	100		90 - 110	M	4/28/2015	04:41	A042815B 0
	Molybdenum	0.0975	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Selenium	0.0953	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Silver	0.0938	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Thallium	0.0945	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Vanadium	0.0978	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0975	0.1000	98		90 - 110	M	4/28/2015	05:23	A042815B 0
	Arsenic	0.0945	0.1000	94		90 - 110	M	4/28/2015	05:23	A042815B 0
	Barium	0.0956	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Beryllium	0.0899	0.1000	90		90 - 110	M	4/28/2015	05:23	A042815B 0
	Cadmium	0.0973	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Chromium	0.0958	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Cobalt	0.0960	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Copper	0.0954	0.1000	95		90 - 110	M	4/28/2015	05:23	A042815B 0
	Lead	0.0970	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Manganese	0.0980	0.1000	98		90 - 110	M	4/28/2015	05:23	A042815B 0
	Molybdenum	0.0966	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Nickel	0.0932	0.1000	93		90 - 110	M	4/28/2015	05:23	A042815B 0
	Selenium	0.0948	0.1000	95		90 - 110	M	4/28/2015	05:23	A042815B 0
	Silver	0.0931	0.1000	93		90 - 110	M	4/28/2015	05:23	A042815B 0
	Thallium	0.0941	0.1000	94		90 - 110	M	4/28/2015	05:23	A042815B 0
	Vanadium	0.0966	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	05:30	A042815B 0
	Barium	0.0051	0.0050	102		70 - 130	M	4/28/2015	05:30	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	05:30	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	05:30	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Manganese	0.0048	0.0050	96		70 - 130	M	4/28/2015	05:30	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	05:30	A042815B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	4/28/2015	05:30	A042815B 0
	Selenium	0.0054	0.0050	108		70 - 130	M	4/28/2015	05:30	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	05:30	A042815B 0
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/28/2015	05:30	A042815B 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	00:54	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	00:54	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	00:54	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	00:54	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	01:57	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	01:57	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	01:57	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	01:57	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	03:37	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	03:37	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	03:37	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	03:37	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	03:37	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	03:37	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	04:34	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	04:34	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	04:34	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	04:34	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	05:26	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	05:26	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	05:26	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	05:26	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169342			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	4/28/2015	01:24	A042815B 0024
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	4/28/2015	01:24	A042815B 0024
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	4/28/2015	01:24	A042815B 0024
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	4/28/2015	01:24	A042815B 0024
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	4/28/2015	01:24	A042815B 0024
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Arsenic	0.0002				-0.00300 - -0.00300	4/28/2015	01:01	A042815B 00
	Barium	0.0004				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Cadmium	0.0009				-0.00100 - -0.00100	4/28/2015	01:01	A042815B 00
	Chromium	0.0004				-0.00400 - -0.00400	4/28/2015	01:01	A042815B 00
	Cobalt	0.0006				-0.00600 - -0.00600	4/28/2015	01:01	A042815B 00
	Copper	0.0012				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Lead	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Manganese	0.0011				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Molybdenum	1.9839	2.00000	99		80 - 120%	4/28/2015	01:01	A042815B 00
	Nickel	0.0007				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Selenium	0.0001				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Silver	0.0004				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Vanadium	0.0002				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Arsenic	0.0190	0.02000	95		80 - 120%	4/28/2015	01:05	A042815B 00
	Barium	0.0003				-0.00500 - -0.00500	4/28/2015	01:05	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Cadmium	0.0090	0.01000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Chromium	0.0174	0.02000	87		80 - 120%	4/28/2015	01:05	A042815B 00
	Cobalt	0.0360	0.04000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Copper	0.0173	0.02000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Lead	0.0002				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Manganese	0.0184	0.02000	92		80 - 120%	4/28/2015	01:05	A042815B 00
	Molybdenum	1.9732	2.00000	99		80 - 120%	4/28/2015	01:05	A042815B 00
	Nickel	0.0345	0.04000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Selenium	0.0182	0.02000	91		80 - 120%	4/28/2015	01:05	A042815B 00
	Silver	0.0168	0.02000	84		80 - 120%	4/28/2015	01:05	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Vanadium	0.0378	0.04000	94		80 - 120%	4/28/2015	01:05	A042815B 00

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900002 **Client ID:** MRC-MW-78B-042315S **LIMS ID:** 2169344

Percent Solids for Sample: 0.00 **Spiked ID:** 2066900002S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.204		0.002		0.222	91		M
Barium	mg/L	75 - 125	2.530		0.103		2.222	109		M
Beryllium	mg/L	75 - 125	0.20364		0.00100	U	0.22222	92		M
Cadmium	mg/L	75 - 125	0.211		0.000		0.222	95		M
Chromium	mg/L	75 - 125	0.215		0.002		0.222	96		M
Cobalt	mg/L	75 - 125	0.264		0.060		0.222	92		M
Copper	mg/L	75 - 125	0.207		0.009		0.222	89		M
Lead	mg/L	75 - 125	0.232		0.001		0.222	104		M
Manganese	mg/L	75 - 125	1.746		1.560		0.222	84		M
Molybdenum	mg/L	75 - 125	0.239		0.003		0.222	106		M
Nickel	mg/L	75 - 125	0.228		0.015		0.222	96		M
Selenium	mg/L	75 - 125	0.183		0.006	U	0.222	82		M
Silver	mg/L	75 - 125	0.104		0.002	U	0.111	94		M
Thallium	mg/L	75 - 125	0.2255		0.0010	U	0.2222	101		M
Vanadium	mg/L	75 - 125	0.225		0.004		0.222	100		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900002 **Client ID:** MRC-MW-78B-042315SD **LIMS ID:** 2169345

Percent Solids for Sample: 0.00 **Spiked ID:** 2066900002SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.202		0.002		0.222	90		M
Barium	mg/L	75 - 125	2.483		0.103		2.222	107		M
Beryllium	mg/L	75 - 125	0.20056		0.00100	U	0.22222	90		M
Cadmium	mg/L	75 - 125	0.207		0.000		0.222	93		M
Chromium	mg/L	75 - 125	0.210		0.002		0.222	94		M
Cobalt	mg/L	75 - 125	0.259		0.060		0.222	90		M
Copper	mg/L	75 - 125	0.203		0.009		0.222	87		M
Lead	mg/L	75 - 125	0.228		0.001		0.222	102		M
Manganese	mg/L	75 - 125	1.731		1.560		0.222	77		M
Molybdenum	mg/L	75 - 125	0.235		0.003		0.222	105		M
Nickel	mg/L	75 - 125	0.222		0.015		0.222	93		M
Selenium	mg/L	75 - 125	0.183		0.006	U	0.222	82		M
Silver	mg/L	75 - 125	0.103		0.002	U	0.111	93		M
Thallium	mg/L	75 - 125	0.2197		0.0010	U	0.2222	99		M
Vanadium	mg/L	75 - 125	0.221		0.004		0.222	98		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900002S **Client ID:** MRC-MW-78B-042315SD **LIMS ID:** 2169345

Percent Solids for Sample: 0.00 **Duplicate ID:** 2066900002SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.22		0		M
Arsenic	mg/L	0 - 20	0.204		0.202		1		M
Barium	mg/L	0 - 20	2.530		2.483		2		M
Beryllium	mg/L	0 - 20	0.20364		0.20056		2		M
Cadmium	mg/L	0 - 20	0.211		0.207		2		M
Chromium	mg/L	0 - 20	0.215		0.210		2		M
Cobalt	mg/L	0 - 20	0.264		0.259		2		M
Copper	mg/L	0 - 20	0.207		0.203		2		M
Lead	mg/L	0 - 20	0.232		0.228		2		M
Manganese	mg/L	0 - 20	1.746		1.731		1		M
Molybdenum	mg/L	0 - 20	0.239		0.235		2		M
Nickel	mg/L	0 - 20	0.228		0.222		3		M
Selenium	mg/L	0 - 20	0.183		0.183		0		M
Silver	mg/L	0 - 20	0.104		0.103		1		M
Thallium	mg/L	0 - 20	0.2255		0.2197		3		M
Vanadium	mg/L	0 - 20	0.225		0.221		2		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169343									
	Antimony	mg/L	0.2220	0.2186		98		80 - 120	M
	Arsenic	mg/L	0.2220	0.2074		93		80 - 120	M
	Barium	mg/L	2.2220	2.3596		106		80 - 120	M
	Beryllium	mg/L	0.2220	0.2029		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2159		97		80 - 120	M
	Chromium	mg/L	0.2220	0.2193		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2238		101		80 - 120	M
	Copper	mg/L	0.2220	0.2169		98		80 - 120	M
	Lead	mg/L	0.2220	0.2219		100		80 - 120	M
	Manganese	mg/L	0.2220	0.2277		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2181		98		80 - 120	M
	Nickel	mg/L	0.2220	0.2367		107		80 - 120	M
	Selenium	mg/L	0.2220	0.1933		87		80 - 120	M
	Silver	mg/L	0.1110	0.1116		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2163		97		80 - 120	M
	Vanadium	mg/L	0.2220	0.2189		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69439						
2169342	MB for HBN 69439 [MDIG/50539	MB	QC-WAT	4/27/15	45.0	50.0	
2169343	LCS for HBN 69439 [MDIG/50539	LCS	QC-WAT	4/27/15	45.0	50.0	
2066900002	MRC-MW-78B-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900002S	MRC-MW-78B-042315S	MS	WATER	4/27/15	45.0	50.0	
2066900002SD	MRC-MW-78B-042315SD	MSD	WATER	4/27/15	45.0	50.0	
2066900003	MRC-MW-92C-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900004	MRC-MW-76A-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900005	MRC-MW-76B-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900006	MRC-MW-26A-042315	SAM	WATER	4/27/15	45.0	50.0	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0024												
BLK	BLK	0028	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0032	101		103		101		100		101		103	
STANDARD 2	STANDARD 2	0035	98		98		99		98		99		99	
STANDARD 3	STANDARD 3	0039	100		102		102		100		100		103	
STANDARD 4	STANDARD 4	0043	98		98		98		97		101		100	
STANDARD 5	STANDARD 5	0046	100		100		100		100		101		101	
ICV	ICV	0050	98		97		97		98		101		99	
ICB1	ICB	0054	90		90		89		89		99		99	
LLICV	LLICV	0058	98		96		95		96		99		99	
ICS-A1	ICSA	0101	89		98		93		98		103		103	
ICS-AB1	ICSAB	0105	92		102		95		101		106		108	
CHECK	ZZZZZZ	0109												
CHECK	ZZZZZZ	0113												
2169338	ZZZZZZ	0116												
2169339	ZZZZZZ	0120												
2169342	MB for HBN 69439	0124	100		107		100		97		94		106	
2169343	LCS for HBN 6943	0127	99		102		100		97		91		104	
2067214003	ZZZZZZ	0131												
2067214005	ZZZZZZ	0135												
2067214007	ZZZZZZ	0139												
2067214009	ZZZZZZ	0142												
2067214011	ZZZZZZ	0146												
2067214013	ZZZZZZ	0150												
CCV1	CCV	0153	101		103		101		99		99		102	
CCB1	CCB	0157	101		104		102		99		97		105	
LLCCV	LLCCV	0201	99		100		98		98		100		99	
2169342	ZZZZZZ	0204												
2067214015	ZZZZZZ	0208												
2067214016	ZZZZZZ	0212												
2066753001	ZZZZZZ	0216												
2066753002	ZZZZZZ	0219												
2066753003	ZZZZZZ	0223												
2066753004	ZZZZZZ	0227												
2066872001	ZZZZZZ	0230												
2066872002	ZZZZZZ	0234												
2066872003	ZZZZZZ	0238												
CCV2	ZZZZZZ	0241												
CCV3	ZZZZZZ	0245												
CCB2	ZZZZZZ	0249												
LLCCV	ZZZZZZ	0253												
2066872004	ZZZZZZ	0256												
2066872005	ZZZZZZ	0300												
2067214009	ZZZZZZ	0304												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2066872002	ZZZZZZ	0308												
2066872004	ZZZZZZ	0311												
2066872005	ZZZZZZ	0315												
2066604002	ZZZZZZ	0319												
2066604004	ZZZZZZ	0322												
2066604005	ZZZZZZ	0326												
CHECK	ZZZZZZ	0330												
CCV4	ZZZZZZ	0334												
CCB3	CCB	0337	99		101		99		97		98		98	
LLCCV	LLCCV	0341	107		108		109		108		97		110	
CCV5	CCV	0345	101		102		100		99		102		101	
2066604006	ZZZZZZ	0349												
2066604006	ZZZZZZ	0352												
2169340	ZZZZZZ	0356												
2169341	ZZZZZZ	0400												
2066604007	ZZZZZZ	0404												
2066900002	MRC-MW-78B-04231	0408	80		93		86		93		98		98	
2066900002S	MRC-MW-78B-04231	0412	83		99		92		99		103		103	
2066900002S	MRC-MW-78B-04231	0415	83		103		91		99		105		105	
2066900003	MRC-MW-92C-04231	0419	98		103		100		99		95		100	
2066900004	MRC-MW-76A-04231	0423	96		108		102		101		95		105	
CCV6	ZZZZZZ	0427												
CCB4	ZZZZZZ	0430												
CCB5	CCB	0434	103		107		106		103		100		103	
LLCCV	LLCCV	0438	101		102		103		102		99		99	
CCV7	CCV	0441	103		104		104		102		100		102	
2066900005	MRC-MW-76B-04231	0445	93		100		95		93		91		99	
2066900006	MRC-MW-26A-04231	0449	96		102		100		96		91		100	
2067191001	ZZZZZZ	0453												
2067191002	ZZZZZZ	0456												
2067191003	ZZZZZZ	0500												
2066900004	MRC-MW-76A-04231	0504	99		108		103		104		106		107	
2067212002	ZZZZZZ	0508												
2067212003	ZZZZZZ	0512												
2067212007	ZZZZZZ	0515												
2067212007L	ZZZZZZ	0519												
CCV8	CCV	0523	106		107		108		107		108		108	
CCB6	CCB	0526	110		110		111		109		99		110	
LLCCV	LLCCV	0530	105		109		107		105		102		105	
2067212007P	ZZZZZZ	0534												
2067213002	ZZZZZZ	0538												
2067213003	ZZZZZZ	0541												
2067213004	ZZZZZZ	0545												
2067213005	ZZZZZZ	0549												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067213006	ZZZZZZ	0553												
2067213006L	ZZZZZZ	0556												
2067213006P	ZZZZZZ	0600												
2067213007	ZZZZZZ	0604												
CCV9	ZZZZZZ	0608												
CCB7	ZZZZZZ	0611												
LLCCV	ZZZZZZ	0615												
CCV10	ZZZZZZ	0619												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0024												
BLK	0028	100											
STANDARD 1	0032	101											
STANDARD 2	0035	99											
STANDARD 3	0039	102											
STANDARD 4	0043	98											
STANDARD 5	0046	101											
ICV	0050	98											
ICB	0054	89											
LLICV	0058	95											
ICSA	0101	99											
ICSAB	0105	102											
ZZZZZZ	0109												
ZZZZZZ	0113												
ZZZZZZ	0116												
ZZZZZZ	0120												
MB for HBN 69439	0124	102											
LCS for HBN 6943	0127	103											
ZZZZZZ	0131												
ZZZZZZ	0135												
ZZZZZZ	0139												
ZZZZZZ	0142												
ZZZZZZ	0146												
ZZZZZZ	0150												
CCV	0153	102											
CCB	0157	102											
LLCCV	0201	99											
ZZZZZZ	0204												
ZZZZZZ	0208												
ZZZZZZ	0212												
ZZZZZZ	0216												
ZZZZZZ	0219												
ZZZZZZ	0223												
ZZZZZZ	0227												
ZZZZZZ	0230												
ZZZZZZ	0234												
ZZZZZZ	0238												
ZZZZZZ	0241												
ZZZZZZ	0245												
ZZZZZZ	0249												
ZZZZZZ	0253												
ZZZZZZ	0256												
ZZZZZZ	0300												
ZZZZZZ	0304												
ZZZZZZ	0308												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0311												
ZZZZZZ	0315												
ZZZZZZ	0319												
ZZZZZZ	0322												
ZZZZZZ	0326												
ZZZZZZ	0330												
ZZZZZZ	0334												
CCB	0337	98											
LLCCV	0341	109											
CCV	0345	100											
ZZZZZZ	0349												
ZZZZZZ	0352												
ZZZZZZ	0356												
ZZZZZZ	0400												
ZZZZZZ	0404												
MRC-MW-78B-04231	0408	90											
MRC-MW-78B-04231	0412	95											
MRC-MW-78B-04231	0415	94											
MRC-MW-92C-04231	0419	103											
MRC-MW-76A-04231	0423	106											
ZZZZZZ	0427												
ZZZZZZ	0430												
CCB	0434	105											
LLCCV	0438	102											
CCV	0441	104											
MRC-MW-76B-04231	0445	98											
MRC-MW-26A-04231	0449	103											
ZZZZZZ	0453												
ZZZZZZ	0456												
ZZZZZZ	0500												
MRC-MW-76A-04231	0504	103											
ZZZZZZ	0508												
ZZZZZZ	0512												
ZZZZZZ	0515												
ZZZZZZ	0519												
CCV	0523	106											
CCB	0526	110											
LLCCV	0530	107											
ZZZZZZ	0534												
ZZZZZZ	0538												
ZZZZZZ	0541												
ZZZZZZ	0545												
ZZZZZZ	0549												
ZZZZZZ	0553												
ZZZZZZ	0556												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-022

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0600												
ZZZZZZ	0604												
ZZZZZZ	0608												
ZZZZZZ	0611												
ZZZZZZ	0615												
ZZZZZZ	0619												

6010C 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-022 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2066900002	MRC-MW-78B-042315	
2066900003	MRC-MW-92C-042315	
2066900004	MRC-MW-76A-042315	
2066900005	MRC-MW-76B-042315	
2066900005S	MRC-MW-76B-042315S	Matrix Spike
2066900005SD	MRC-MW-76B-042315SD	Matrix Spike Duplicate
2066900006	MRC-MW-26A-042315	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0829												X													
ICAL2	1.00	0833												X													
ICAL3	1.00	0836												X													
ICAL4	1.00	0839												X													
ICAL5	1.00	0842												X													
ICV1	1.00	0845												X													
ICB1	1.00	0848												X													
CRDL1	1.00	0851												X													
CCV1	1.00	0855												X													
HIGH	1.00	0857												X													
ICS-A1	1.00	0900												X													
ICS-AB1	1.00	0903												X													
ZZZZZZ	200.00	0930																									
ZZZZZZ	50.00	0934																									
ZZZZZZ	20.00	0937																									
ZZZZZZ	5.00	0941																									
ZZZZZZ	5.00	0944																									
ZZZZZZ	100.00	0947																									
ZZZZZZ	1.00	0950																									
ZZZZZZ	1.00	0953																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	0959																									
ZZZZZZ	1.00	1002																									
ZZZZZZ	1.00	1005																									
ZZZZZZ	1.00	1008																									
ZZZZZZ	1.00	1012																									
ZZZZZZ	1.00	1015																									
ZZZZZZ	1.00	1018																									
ZZZZZZ	1.00	1021																									
ZZZZZZ	1.00	1024																									
ZZZZZZ	1.00	1027																									
ZZZZZZ	1.00	1030																									
ZZZZZZ	1.00	1034																									
ZZZZZZ	1.00	1037																									
ZZZZZZ	1.00	1040																									
ZZZZZZ	1.00	1043																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1046																									
ZZZZZZ	1.00	1049																									
ZZZZZZ	1.00	1052																									
ZZZZZZ	1.00	1055																									
ZZZZZZ	1.00	1059																									
ZZZZZZ	1.00	1102																									
ZZZZZZ	1.00	1105																									
ZZZZZZ	1.00	1108																									
ZZZZZZ	1.00	1111																									
ZZZZZZ	1.00	1114																									
ZZZZZZ	1.00	1118																									
ZZZZZZ	1.00	1120																									
ZZZZZZ	1.00	1124																									
ZZZZZZ	2.00	1127																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	10.00	1156																									
ZZZZZZ	10.00	1159																									
2066900002	1.00	1202											X														
2066900003	1.00	1206											X														
CCV5	1.00	1209											X														
CCB4	1.00	1212											X														
2169364	1.00	1215											X														
2169365	1.00	1218											X														
2066900004	1.00	1221											X														
2066900005	1.00	1224											X														
2066900005S	1.00	1227											X														
2066900005SD	1.00	1230											X														
2066900006	1.00	1233											X														
ZZZZZZ	1.00	1236																									
ZZZZZZ	1.00	1239																									
ZZZZZZ	1.00	1243																									
CCV6	1.00	1246											X														
ZZZZZZ	1.00	1249																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB6	1.00	1259												X													
ZZZZZZ	1.00	1302																									
ZZZZZZ	10.00	1306																									
ZZZZZZ	20.00	1309																									
ZZZZZZ	5.00	1312																									
ZZZZZZ	5.00	1316																									
ZZZZZZ	5.00	1319																									
ZZZZZZ	5.00	1322																									
ZZZZZZ	100.00	1325																									
ZZZZZZ	100.00	1329																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	5.00	1407																									
ZZZZZZ	100.00	1410																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1449																									
ZZZZZZ	100.00	1454																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1500																									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1507																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1519																									
CCV9	1.00	1523												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB10	1.00	1525												X													
ZZZZZZ	1.00	1532																									
LLCCV	1.00	1543												X													
ICS-A2	1.00	1546												X													
ICS-AB2	1.00	1550												X													

6010C 3015

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.953	1.000	95		90 - 110	P	4/28/2015	08:45	042815A 30
CCV	Iron	2.436	2.500	97		90 - 110	P	4/28/2015	08:55	042815A 30
CCV	Iron	2.627	2.500	105		90 - 110	P	4/28/2015	12:09	042815A 30
CCV	Iron	2.637	2.500	105		90 - 110	P	4/28/2015	12:46	042815A 30
CCV	Iron	2.546	2.500	102		90 - 110	P	4/28/2015	15:23	042815A 30
LLCCV	Iron	0.069	0.060	115		70 - 130	P	4/28/2015	15:43	042815A 30

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.066	0.060	110		70 - 130	P	4/28/2015	08:51	042815A 3

6010C 3015

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	08:48	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	12:12	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	12:59	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	15:25	042815A 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169364			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/28/2015	12:15	042815A 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	110.1	125.0	88		80 - 120%	4/28/2015	09:00	042815A 3015
ICSAB									
	Iron	114.5	125.0	92		80 - 120%	4/28/2015	09:03	042815A 3015
ICSA									
	Iron	115.3	125.0	92		80 - 120%	4/28/2015	15:46	042815A 3015
ICSAB									
	Iron	118.9	125.0	95		80 - 120%	4/28/2015	15:50	042815A 3015

6010C 3015

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900005 **Client ID:** MRC-MW-76B-042315S **LIMS ID:** 2169366

Percent Solids for Sample: 0.00 **Spiked ID:** 2066900005S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	21.011		20.122		1.111	NSC		P

6010C 3015

- 5a -

MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900005 **Client ID:** MRC-MW-76B-042315SD **LIMS ID:** 2169367

Percent Solids for Sample: 0.00 **Spiked ID:** 2066900005SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	21.122		20.122		1.111	NSC		P

6010C 3015
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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2066900005S **Client ID:** MRC-MW-76B-042315SD **LIMS ID:** 2169367

Percent Solids for Sample: 0.00 **Duplicate ID:** 2066900005SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	mg/L	0 - 20	21.011		21.122		0.5		P

6010C 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169365									
	Iron	mg/L	1.11	1.157		104		80 - 120	P

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69443						
2066900002	MRC-MW-78B-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900003	MRC-MW-92C-042315	SAM	WATER	4/27/15	45.0	50.0	
2169364	MB for HBN 69443 [MDIG/50543	MB	QC-WAT	4/27/15	45.0	50.0	
2169365	LCS for HBN 69443 [MDIG/50543	LCS	QC-WAT	4/27/15	45.0	50.0	
2066900004	MRC-MW-76A-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900005	MRC-MW-76B-042315	SAM	WATER	4/27/15	45.0	50.0	
2066900005S	MRC-MW-76B-042315S	MS	WATER	4/27/15	45.0	50.0	
2066900005SD	MRC-MW-76B-042315SD	MSD	WATER	4/27/15	45.0	50.0	
2066900006	MRC-MW-26A-042315	SAM	WATER	4/27/15	45.0	50.0	

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-022 **Method Type:** 7470A **SOW No.:**

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2066900002	MRC-MW-78B-042315	
2066900003	MRC-MW-92C-042315	
2066900004	MRC-MW-76A-042315	
2066900005	MRC-MW-76B-042315	
2066900006	MRC-MW-26A-042315	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1312																X								
Standard #1 (0.2ppb	1.00	1313																X								
	1.00	1314																X								
	1.00	1315																X								
	1.00	1317																X								
	1.00	1318																X								
ICV1	1.00	1319																X								
ICB1	1.00	1320																X								
ZZZZZZ	1.00	1321																								
ZZZZZZ	1.00	1322																								
ZZZZZZ	1.00	1323																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1325																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	1.00	1327																								
ZZZZZZ	1.00	1328																								
ZZZZZZ	1.00	1329																								
ZZZZZZ	1.00	1330																								
ZZZZZZ	1.00	1332																								
ZZZZZZ	1.00	1333																								
ZZZZZZ	1.00	1334																								
ZZZZZZ	1.00	1335																								
ZZZZZZ	1.00	1336																								
ZZZZZZ	1.00	1337																								
ZZZZZZ	1.00	1338																								
ZZZZZZ	1.00	1339																								
ZZZZZZ	1.00	1340																								
ZZZZZZ	1.00	1341																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1343																								
ZZZZZZ	1.00	1344																								
ZZZZZZ	1.00	1345																								
ZZZZZZ	1.00	1346																								
ZZZZZZ	1.00	1348																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1350																								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1351																								
ZZZZZZ	1.00	1352																								
ZZZZZZ	1.00	1353																								
ZZZZZZ	1.00	1354																								
ZZZZZZ	1.00	1355																								
ZZZZZZ	1.00	1356																								
ZZZZZZ	1.00	1357																								
ZZZZZZ	1.00	1358																								
ZZZZZZ	1.00	1359																								
ZZZZZZ	1.00	1400																								
ZZZZZZ	1.00	1402																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1404																								
ZZZZZZ	1.00	1405																								
ZZZZZZ	1.00	1406																								
ZZZZZZ	1.00	1407																								
ZZZZZZ	1.00	1408																								
ZZZZZZ	1.00	1409																								
ZZZZZZ	1.00	1410																								
ZZZZZZ	1.00	1411																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1413																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1416																								
ZZZZZZ	1.00	1417																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1420																								
ZZZZZZ	1.00	1421																								
ZZZZZZ	1.00	1422																								
ZZZZZZ	1.00	1423																								
ZZZZZZ	1.00	1424																								
ZZZZZZ	1.00	1426																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1429																								

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1430																										
ZZZZZZ	1.00	1431																										
ZZZZZZ	1.00	1432																										
ZZZZZZ	1.00	1433																										
ZZZZZZ	1.00	1434																										
ZZZZZZ	1.00	1435																										
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1438																										
ZZZZZZ	1.00	1439																										
ZZZZZZ	1.00	1440																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1442																										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1445																										
ZZZZZZ	1.00	1446																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1448																										
CCV7	1.00	1449																X										
CCB7	1.00	1450																X										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
2171363	1.00	1455																X										
2171364	1.00	1456																X										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
CCV8	1.00	1502																X										
CCB8	1.00	1503																X										
2066900002	1.00	1504																X										
2066900003	1.00	1505																X										
2066900004	1.00	1506																X										
2066900005	1.00	1507																X										

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM022|112ICO6247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-022

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2066900006	1.00	1508																X									
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1511																									
ZZZZZZ	1.00	1512																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1514																									
CCV9	1.00	1515																X									
CCB9	1.00	1516																X									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1518																									
ZZZZZZ	1.00	1519																									
ZZZZZZ	1.00	1520																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1522																									
ZZZZZZ	1.00	1524																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1526																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1528																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1530																									
ZZZZZZ	1.00	1531																									
ZZZZZZ	1.00	1532																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1534																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1537																									

7470A
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	13:19	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:49	043015W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/30/2015	15:02	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	15:15	043015W

7470A
- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	13:20	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:50	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	15:03	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	15:16	043015W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171363			QC-WATER								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/30/2015	14:55	043015W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171364									
	Mercury	mg/L	0.0020	0.0022		110		85 - 115	CV

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- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-022

Contract: TMM022|112ICO6247 **Lab Code:** CAS

Method: CV

Case No.: _____ **SAS No.:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70338						
2171363	MB for HBN 70338 [MDIG/50619	MB	QC-WAT	4/30/15	25.0	25.0	
2171364	LCS for HBN 70338 [MDIG/50619	LCS	QC-WAT	4/30/15	25.0	25.0	
2066900002	MRC-MW-78B-042315	SAM	WATER	4/30/15	25.0	25.0	
2066900003	MRC-MW-92C-042315	SAM	WATER	4/30/15	25.0	25.0	
2066900004	MRC-MW-76A-042315	SAM	WATER	4/30/15	25.0	25.0	
2066900005	MRC-MW-76B-042315	SAM	WATER	4/30/15	25.0	25.0	
2066900006	MRC-MW-26A-042315	SAM	WATER	4/30/15	25.0	25.0	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JUNE 11, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- VOC / METALS**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2067191R

SAMPLES: 2/Aqueous/VOC

MRC-MW-57A-042415 TB-042415

3/Aqueous/Metals

MRC-MW-49A-042415 MRC-MW-57A-042415 MRC-MW-59A-042415

Overview

The sample set for Lockheed- MRC, SDG 2067191R consists of three (3) aqueous environmental samples and a trip blank. One (1) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Three (3) aqueous environmental samples were analyzed for metals. There is no field duplicate pair included in this SDG.

The samples were collected on April 24, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, and 7470A analytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation and detection limits.

Areas of concern with respect to data quality are listed below.

Minor Problems

- The continuing calibration percent difference (%D) for 2-butanone was greater than the 20% quality control limit on April 30, 2015 @ 01:48 on instrument ms15.i. The detected 2-butanone result in the affected sample MRC-MW-57A-042415 was qualified as estimated (J).

- Contamination was detected in the trip blank.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane	0.50	2.5

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. The detected bromomethane result in sample MRC-MW-57A-042415 was qualified as (U).

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Contamination was detected in the laboratory method blank associated with batch 2170306 affecting the trip blank.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane	0.52	2.6
Carbon disulfide	0.38	1.9
1,4-dichlorobenzene	0.27	1.35

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. No action was taken on the field quality blank due to laboratory blank contamination.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The continuing calibration %D for 2-butanone was greater than the 20% quality control limit.

Other Factors Affecting Data Quality: Trip blank contained bromomethane. No validation action was required.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech
for Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-49A-042415			MRC-MW-57A-042415			MRC-MW-59A-042415		
SDG: 2067191R	LAB_ID	2067191003			2067191001			2067191002		
FRACTION: M	SAMP_DATE	4/24/2015			4/24/2015			4/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									

PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY	0.00074	U		0.00074	U		0.00074	U	
ARSENIC	0.0025	J	P	0.0016	J	P	0.001	U	
BARIUM	0.27			0.34			0.18		
BERYLLIUM	0.014			0.0003	U		0.0019		
CADMIUM	0.0018			0.00037	U		0.00037	U	
CHROMIUM	0.0012	J	P	0.0014	J	P	0.0009	J	P
COBALT	0.72			0.039			0.039		
COPPER	0.082			0.015			0.0043	J	P
IRON	0.091			18.4			2.5		
LEAD	0.0015	J	P	0.00074	U		0.00074	U	
MANGANESE	0.96			7.8			2.8		
MERCURY	0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM	0.00074	U		0.0012	J	P	0.00074	U	
NICKEL	1.5			0.014			0.029		
SELENIUM	0.0079			0.0019	U		0.0019	U	
SILVER	0.0009	J	P	0.00074	U		0.00074	U	
THALLIUM	0.00081	J	P	0.0003	U		0.0003	U	
VANADIUM	0.00074	U		0.00099	J	P	0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-57A-042415			TB-042415		
SDG: 2067191R	LAB_ID	2067191001			2067191004		
FRACTION: OV	SAMP_DATE	4/24/2015			4/24/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U	
2-BUTANONE		4.9	J	CP	1.8	U	
2-HEXANONE		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U	
ACETONE		57.3			3.1	U	
BENZENE		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U	
BROMOMETHANE		0.49	U	B	0.5	J	P
CARBON DISULFIDE		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U	
CHLOROMETHANE		0.36	J	P	0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-57A-042415			TB-042415		
SDG: 2067191R	LAB_ID	2067191001			2067191004		
FRACTION: OV	SAMP_DATE	4/24/2015			4/24/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191001** Date Collected: 4/24/2015 10:30 Matrix: Water

Sample ID: **MRC-MW-57A-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	57.3		ug/L	10.0	3.1	SW846 8260C		4/30/15 05:59	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:59	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:59	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:59	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 05:59	JPA	A
Bromomethane	0.49J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 05:59	JPA	A
2-Butanone	4.9J	J	ug/L	10.0	1.8	SW846 8260C		4/30/15 05:59	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 05:59	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:59	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 05:59	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 05:59	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:59	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 05:59	JPA	A
Chloromethane	0.36J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 05:59	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:59	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 05:59	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:59	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 05:59	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 05:59	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 05:59	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 05:59	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 05:59	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:59	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:59	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 05:59	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:59	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 05:59	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 05:59	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 05:59	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 05:59	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 05:59	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 05:59	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 05:59	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 05:59	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 05:59	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 05:59	JPA	A

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191001** Date Collected: 4/24/2015 10:30 Matrix: Water

Sample ID: **MRC-MW-57A-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:59	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 05:59	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 05:59	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:59	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 05:59	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 05:59	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 05:59	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 05:59	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 05:59	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 05:59	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:59	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:59	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 05:59	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 05:59	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 05:59	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 05:59	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133		SW846 8260C			4/30/15 05:59	JPA	A
4-Bromofluorobenzene (S)	97.6		%	79 - 114		SW846 8260C			4/30/15 05:59	JPA	A
Dibromofluoromethane (S)	106		%	78 - 116		SW846 8260C			4/30/15 05:59	JPA	A
Toluene-d8 (S)	101		%	76 - 127		SW846 8260C			4/30/15 05:59	JPA	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Arsenic, Total	0.0016J	J	mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Barium, Total	0.34		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Chromium, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Cobalt, Total	0.039		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Copper, Total	0.015		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Iron, Total	18.4		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:36	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Manganese, Total	7.8		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:12	MNP	D3
Molybdenum, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Nickel, Total	0.014		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191001** Date Collected: 4/24/2015 10:30 Matrix: Water

Sample ID: **MRC-MW-57A-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1
Vanadium, Total	0.00099J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:53	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191002** Date Collected: 4/24/2015 09:15 Matrix: Water

Sample ID: **MRC-MW-59A-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Barium, Total	0.18		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Beryllium, Total	0.0019		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Chromium, Total	0.00090J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Cobalt, Total	0.039		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Copper, Total	0.0043J	J	mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Iron, Total	2.5		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:39	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Manganese, Total	2.8		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:13	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Nickel, Total	0.029		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 04:56	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191003** Date Collected: 4/24/2015 12:25 Matrix: Water

Sample ID: **MRC-MW-49A-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Arsenic, Total	0.0025J	J	mg/L	0.0030	0.0010	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Barium, Total	0.27		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Beryllium, Total	0.014		mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Cadmium, Total	0.0018		mg/L	0.0011	0.00037	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Chromium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Cobalt, Total	0.72		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Copper, Total	0.082		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Iron, Total	0.091		mg/L	0.067	0.022	SW846 6010C	4/27/15	AAM	4/28/15 12:43	SRT	A2
Lead, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Manganese, Total	0.96		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	4/30/15	MNP	4/30/15 15:14	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Nickel, Total	1.5		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Selenium, Total	0.0079		mg/L	0.0056	0.0019	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Silver, Total	0.00090J	J	mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Thallium, Total	0.00081J	J	mg/L	0.0010	0.00030	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/27/15	AAM	4/28/15 05:00	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191004** Date Collected: 4/24/2015 20:50 Matrix: Water

Sample ID: **TB-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 04:31	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:31	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:31	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:31	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 04:31	JPA	A
Bromomethane	0.50J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 04:31	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 04:31	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:31	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:31	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 04:31	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:31	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 04:31	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:31	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:31	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 04:31	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:31	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 04:31	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 04:31	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:31	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:31	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:31	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:31	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:31	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:31	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:31	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:31	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:31	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 04:31	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:31	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:31	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 04:31	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:31	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 04:31	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:31	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067191 TMM023|112IC06247

Lab ID: **2067191004** Date Collected: 4/24/2015 20:50 Matrix: Water

Sample ID: **TB-042415** Date Received: 4/24/2015 20:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/29/15 04:31	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:31	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:31	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:31	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/29/15 04:31	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:31	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/29/15 04:31	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/29/15 04:31	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:31	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:31	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:31	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:31	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/29/15 04:31	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260C		4/29/15 04:31	JPA	A
4-Bromofluorobenzene (S)	96.8		%	79 - 114	SW846 8260C		4/29/15 04:31	JPA	A
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260C		4/29/15 04:31	JPA	A
Toluene-d8 (S)	98.5		%	76 - 127	SW846 8260C		4/29/15 04:31	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-023

Sample Management

This report contains the results of the analysis of four (4) ground water samples collected on April 24, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 24, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Two (2) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2170306, bromomethane was detected at 0.52J µg/L; carbon disulfide was detected at 0.38J µg/L; 1,4-dichlorobenzene was detected at 0.27J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

Total Metals by SW-846 Method 6020A

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Three (3) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Three (3) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 5/15/2015

DJM

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE _

2067191

Project Name: MRC-GW 2015 Sampling	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech Inc 20251 Century BLVD Ste 200 Germantown, MD 20874	
Phone #: 301 528-3021	Email:
Sampler's Signature:	Sampler's Printed Name: Trevor Grandy

ANALYSIS REQUESTED (Include Method Number and Cor.

PRESERVATIVE

NUMBER OF CONTAINERS

GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP | GC/MS SVOAs ◦ 8270 ◦ 625 | GC VOAs ◦ 8021 ◦ 601/602 | PESTICIDES ◦ 8081 ◦ 608 | PCBs ◦ 8082 ◦ 608 | METALS, TOTAL (List in comments below) | METALS, DISSOLVED (List in comments below) | REMARKS/ ALTERNATE DESCRIPTION

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	#	GC/MS VOAs	GC/MS SVOAs	GC VOAs	PESTICIDES	PCBs	METALS, TOTAL	METALS, DISSOLVED	REMARKS/ ALTERNATE DESCRIPTION
MRC-MW-57A-042415		4/24/15	1030	GW	4						X		
MRC-MW-59A-042415		↓	0915	↓	4						X		
MRC-MW-49A-042415		↓	1225	↓	1						X		
TB-042415		4/24/15	—	✓		X							

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Therm ID: 291
Ship Carrier: FedEx UPS DHL
Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS
Metals

LMG 04/25/15 0454

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Trevor Grandy	Printed Name: Lawrence Lawson	Printed Name: Lawrence Lawson	Printed Name: Deandre Sessoms	Printed Name: Deandre Sessoms	Printed Name
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm
Date/Time: 4-24-15 - 1300	Date/Time: 4/24/15 1300	Date/Time: 4/24/15 1520	Date/Time: 4/24/15 1600	Date/Time: 4/24/15 2050	Date/Time

4-24-15 2050

Distribution: White - Lab Copy; Yellow - Return to Originator

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ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2067191 TMM023|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2067191001	MRC-MW-57A-042415	Water	4/24/2015 10:30	4/24/2015 20:50	Collected by Client
2067191002	MRC-MW-59A-042415	Water	4/24/2015 09:15	4/24/2015 20:50	Collected by Client
2067191003	MRC-MW-49A-042415	Water	4/24/2015 12:25	4/24/2015 20:50	Collected by Client
2067191004	TB-042415	Water	4/24/2015 20:50	4/24/2015 20:50	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-023

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170306(MB)	2170306	15042863.D	4/29/2015	03:05
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22
TB-042415	2067191004	15042868.D	4/29/2015	04:31

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170306

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-023

Lab File ID: 15042863.D Lab Sample ID: 2170306

Date Analyzed: 4/29/2015 Time Analyzed: 03:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170307(LCS)	2170307	15042864.D	03:22
TB-042415	2067191004	15042868.D	04:31

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.52	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.38	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.27	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-023

Lab File ID: 15043000.D BFB Injection Date: 4/30/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	81.0
175	5.0 - 9.0% of mass 174	5.8 (7.2) 1
176	95.0 - 101.0% of mass 174	79.5 (98.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15043002.D	4/30/2015	01:48
2170933(MB)	2170933	15043005.D	4/30/2015	02:50
2170934(LCS)	2170934	15043006.D	4/30/2015	03:08
MRC-MW-57A-042415	2067191001	15043016.D	4/30/2015	05:59

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.2	100.0	Q
Acrolein	0.0581	0.0524			-9.9	100.0	A
Acrylonitrile	0.1086	0.1034			-4.8	100.0	A
Acetonitrile	250		247		-1.1	100.0	Q
tert-Amyl Ethylether	50.0000		43.2377		-13.5	100.0	Q
tert-Amyl methyl ether	50.0000		43.0118		-14.0	100.0	Q
tert-Amyl Alcohol	250		207		-17.3	100.0	Q
Benzene	1.4258	1.3455			-5.6	100.0	A
Benzyl Chloride	50.0000		38.9773		-22.0	100.0	Q
Bromobenzene	0.9609	0.9127			-5.0	100.0	A
Bromochloromethane	50.0000		48.8843		-2.2	100.0	Q
Bromodichloromethane	0.4399	0.4168			-5.3	100.0	A
Bromoform	50.0000		41.9449	0.100	-16.1	100.0	Q
Bromomethane	50.0000		59.3716		18.7	100.0	Q
2-Butanone	250		195		-22.0	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0221			-13.3	100.0	A
tert-Butylbenzene	50.0000		45.1641		-9.7	100.0	Q
n-Butylbenzene	50.0000		44.1110		-11.8	100.0	Q
sec-Butylbenzene	50.0000		45.2798		-9.4	100.0	Q
Carbon Disulfide	50.0000		46.4227		-7.2	100.0	Q
Carbon Tetrachloride	0.4297	0.4103			-4.5	100.0	A
Chloroacetonitrile	250		212		-15.1	100.0	Q
Chlorobenzene	2.3877	2.0948		0.300	-12.3	100.0	A
1-Chlorobutane	50.0000		47.2735		-5.5	100.0	Q
Chlorodibromomethane	50.0000		43.8207		-12.4	100.0	Q
Chloroethane	50.0000		50.8149		1.6	100.0	Q
2-Chloroethylvinyl ether	50.0000		36.5947		-26.8	100.0	Q
Chloroform	50.0000		49.5065		-1.0	20.0	Q
1-Chlorohexane	50.0000		43.5800		-12.8	100.0	Q
Chloromethane	50.0000		54.8450	0.100	9.7	100.0	Q
Chloroprene	0.4876	0.4827			-1.0	100.0	A
3-Chloro-1-propene	50.0000		45.8975		-8.2	100.0	Q
o-Chlorotoluene	50.0000		45.5015		-9.0	100.0	Q
p-Chlorotoluene	50.0000		45.2425		-9.5	100.0	Q
Cyclohexane	0.4544	0.4665			2.7	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.5241		-17.0	100.0	Q
1,2-Dibromoethane	0.6562	0.5552			-15.4	100.0	A
Dibromomethane	0.2114	0.1903			-10.0	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.1969			-13.7	100.0	A
1,2-Dichlorobenzene	1.7893	1.6318			-8.8	100.0	A
1,3-Dichlorobenzene	1.8566	1.7159			-7.6	100.0	A
1,4-Dichlorobenzene	1.9931	1.7805			-10.7	100.0	A
Dichlorodifluoromethane	50.0000		52.9865		6.0	100.0	Q
1,1-Dichloroethane	50.0000		50.7649	0.100	1.5	100.0	Q
1,2-Dichloroethene, Total	100		96.7581		-3.2	100.0	Q
1,2-Dichloroethane	50.0000		47.6995		-4.6	100.0	Q
1,1-Dichloroethene	50.0000		48.6981		-2.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.4385			-5.5	100.0	A
trans-1,2-Dichloroethene	50.0000		49.5179		-1.0	100.0	Q
Dichlorofluoromethane	50.0000		48.7129		-2.6	100.0	Q
1,1-Dichloro-2-Propanone	250		214		-14.2	100.0	Q
2,2-Dichloropropane	0.3930	0.3391			-13.7	100.0	A
1,3-Dichloropropane	50.0000		44.5618		-10.9	100.0	Q
1,2-Dichloropropane	0.3530	0.3317			-6.0	20.0	A
1,1-Dichloropropene	0.4527	0.4426			-2.2	100.0	A
cis-1,3-Dichloropropene	50.0000		42.8517		-14.3	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.3453		-13.3	100.0	Q
1,3-Dichloropropene, Total	100		86.1970		-13.8	100.0	Q
Diisobutylene	50.0000		45.7096		-8.6	100.0	Q
Diisopropyl ether	50.0000		48.8422		-2.3	100.0	Q
1,4-Dioxane	1250		1047		-16.3	100.0	Q
Ethyl Acetate	0.2675	0.2401			-10.2	100.0	A
Ethyl ether	50.0000		46.3510		-7.3	100.0	Q
Ethyl Methacrylate	50.0000		41.4696		-17.1	100.0	Q
Ethyl tert-butyl ether	0.8344	0.7905			-5.3	100.0	A
Ethylbenzene	50.0000		45.7960		-8.4	20.0	Q
Freon 113	50.0000		47.7930		-4.4	100.0	Q
Heptane	50.0000		41.9493		-16.1	100.0	Q
Hexachlorobutadiene	50.0000		43.6456		-12.7	100.0	Q
Hexachloroethane	50.0000		44.2898		-11.4	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		46.3563		-7.3	100.0	Q
2-Hexanone	250		210		-16.1	100.0	Q
Iodomethane	50.0000		64.6925		29.4	100.0	Q
Isobutyl alcohol	500		416		-16.8	100.0	Q
Isopropyl Alcohol	250		227		-9.3	100.0	Q
Isopropylbenzene	50.0000		44.5488		-10.9	100.0	Q
p-Isopropyltoluene	50.0000		44.3574		-11.3	100.0	Q
Methyl acetate	50.0000		47.9380		-4.1	100.0	Q
Methyl acrylate	0.2529	0.2324			-8.1	100.0	A
Methacrylonitrile	50.0000		46.5053		-7.0	100.0	Q
Methyl cyclohexane	1.1020	1.0155			-7.8	100.0	A
Methyl methacrylate	50.0000		42.5022		-15.0	100.0	Q
Methyl t-Butyl Ether	0.8449	0.7340			-13.1	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		214		-14.3	100.0	Q
Methylene Chloride	50.0000		50.9288		1.9	100.0	Q
Naphthalene	50.0000		38.4048		-23.2	100.0	Q
Nitrobenzene	500		372		-25.7	100.0	Q
2-Nitropropane	250		225		-10.0	100.0	Q
Octane	50.0000		39.9334		-20.1	100.0	Q
Pentachloroethane	0.6997	0.6337			-9.4	100.0	A
Pentane	50.0000		45.4640		-9.1	100.0	Q
n-Propanol	500		515		3.1	100.0	Q
Propionitrile	0.0436	0.0401			-8.0	100.0	A
n-Propylbenzene	50.0000		45.6385		-8.7	100.0	Q
Styrene	50.0000		45.0324		-9.9	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6929			-14.0	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.2088	0.300	-11.6	100.0	Q
Tetrachloroethene	50.0000		46.5844		-6.8	100.0	Q
Tetrahydrofuran	250		219		-12.2	100.0	Q
Toluene	50.0000		45.2579		-9.5	20.0	Q
Total Xylenes	150		134		-10.9	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.5426		-16.9	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.4271		-19.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4758			-7.7	100.0	A
1,1,2-Trichloroethane	50.0000		45.5646		-8.9	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-023

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		47.0150		-6.0	100.0	Q
Trichlorofluoromethane	50.0000		50.1777		0.4	100.0	Q
1,2,3-Trichloropropane	50.0000		44.2524		-11.5	100.0	Q
1,2,4-Trimethylbenzene	50.0000		45.2673		-9.5	100.0	Q
1,3,5-Trimethylbenzene	50.0000		45.7632		-8.5	100.0	Q
Vinyl Acetate	50.0000		46.1661		-7.7	100.0	Q
Vinyl Chloride	50.0000		49.0546		-1.9	20.0	Q
o-Xylene	50.0000		42.7290		-14.5	100.0	L
mp-Xylene	100		90.9349		-9.1	100.0	Q
4-Bromofluorobenzene	50.0000		47.6456		-4.7	100.0	Q
Dibromofluoromethane	50.0000		49.2453		-1.5	100.0	Q
1,2-Dichloroethane-d4	50.0000		48.2810		-3.4	100.0	Q
Toluene-d8	2.4192	2.2464			-7.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170933

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-023

Lab File ID: 15043005.D Lab Sample ID: 2170933

Date Analyzed: 4/30/2015 Time Analyzed: 02:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170934(LCS)	2170934	15043006.D	03:08
MRC-MW-57A-042415	2067191001	15043016.D	05:59

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-023

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2170306(MB)	97.6	98.9	102	101	0
02	2170307(LCS)	96.5	94.4	94.2	91.3	0
03	TB-042415	96.8	103	107	98.5	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-023

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
04	2170933(MB)	89.5	101	106	97.2	0
05	2170934(LCS)	90.2	93.0	94.1	87.5	0
06	MRC-MW-57A-042415	97.6	106	112	101	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.9	99.9	(40-151)
Benzene	20.0		19.2	96.2	(80-124)
Bromochloromethane	20.0		19.1	95.7	(73-117)
Bromodichloromethane	20.0		18.4	92	(79-126)
Bromoform	20.0		16.1	80.6	(70-123)
Bromomethane	20.0		23.0	115	(45-148)
2-Butanone	100		88.2	88.2	(50-152)
Carbon Disulfide	20.0		16.2	81.1	(57-131)
Carbon Tetrachloride	20.0		18.9	94.3	(62-132)
Chlorobenzene	20.0		18.1	90.4	(85-117)
Chlorodibromomethane	20.0		17.1	85.6	(77-122)
Chloroethane	20.0		18.8	94.2	(51-142)
Chloroform	20.0		19.9	99.7	(78-122)
Chloromethane	20.0		23.4	117	(38-156)
Cyclohexane	20.0		19.9	99.3	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.2	81.2	(59-133)
1,2-Dibromoethane	20.0		17.4	87.1	(80-124)
1,2-Dichlorobenzene	20.0		18.1	90.5	(82-118)
1,3-Dichlorobenzene	20.0		19.0	95	(81-118)
1,4-Dichlorobenzene	20.0		18.6	92.9	(81-116)
Dichlorodifluoromethane	20.0		20.0	99.9	(17-166)
1,1-Dichloroethane	20.0		19.8	99	(78-124)
1,2-Dichloroethane	20.0		19.8	99.1	(70-133)
1,1-Dichloroethene	20.0		18.8	94.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.3	91.5	(78-125)
trans-1,2-Dichloroethen	20.0		20.6	103	(71-122)
1,2-Dichloropropane	20.0		18.8	94	(81-127)
cis-1,3-Dichloropropene	20.0		16.6	83.1	(81-121)
trans-1,3-Dichloroprope	20.0		17.1	85.7	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		390	78	(1-280)
Ethylbenzene	20.0		17.8	89.2	(80-124)
Freon 113	20.0		19.5	97.5	(50-130)
2-Hexanone	100		79.9	79.9	(65-154)
Isopropylbenzene	20.0		16.1	80.4	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.2	90.9	(70-130)
Methyl t-Butyl Ether	20.0		17.5	87.7	(69-115)
4-Methyl-2-Pentanone(MI	100		81.9	81.9	(71-146)
Methylene Chloride	20.0		20.6	103	(76-121)
Styrene	20.0		17.0	85	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.9	94.5	(74-135)
Tetrachloroethene	20.0		19.3	96.3	(72-124)
Toluene	20.0		18.3	91.4	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.9	69.5	(67-123)
1,1,1-Trichloroethane	20.0		18.9	94.3	(66-130)
1,1,2-Trichloroethane	20.0		19.1	95.7	(82-126)
Trichloroethene	20.0		19.3	96.7	(77-124)
Trichlorofluoromethane	20.0		19.4	96.8	(38-123)
Vinyl Chloride	20.0		19.0	94.8	(27-138)
o-Xylene	20.0		16.1	80.4	(79-124)
mp-Xylene	40.0		34.7	86.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170306(MB)	281749	5.912	230024	7.686	712696	3.910
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910
TB-042415	254675	5.913	200279	7.686	637016	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-023

Lab File ID: 15043002.D Date Analyzed: 4/30/2015

Instrument ID: ms15.i Time Analyzed: 01:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	377428	5.913	347722	7.686	793589	3.910
UPPER LIMIT	754856	6.413	695444	8.186	1587178	4.410
LOWER LIMIT	188714	5.413	173861	7.186	396795	3.410
SAMPLE NO.						
1800	377428	5.913	347722	7.686	793589	3.910
2170933(MB)	241882	5.913	192305	7.686	624719	3.910
2170934(LCS)	356190	5.913	320195	7.686	761046	3.910
MRC-MW-57A-042415	228981	5.913	178479	7.686	582691	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-023 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2067191001	MRC-MW-57A-042415	
2067191002	MRC-MW-59A-042415	
2067191003	MRC-MW-49A-042415	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69439						
2169342	MB for HBN 69439 [MDIG/50539	MB	QC-WAT	4/27/15	45.0	50.0	
2169343	LCS for HBN 69439 [MDIG/50539	LCS	QC-WAT	4/27/15	45.0	50.0	
2067191001	MRC-MW-57A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191002	MRC-MW-59A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191003	MRC-MW-49A-042415	SAM	WATER	4/27/15	45.0	50.0	

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0024																										
BLK	1.00	0028			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0032			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0035			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0039			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0043			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0046			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0050			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0054			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0058			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0101			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0105			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0109																										
ZZZZZZ	1.00	0113																										
ZZZZZZ	1.00	0116																										
ZZZZZZ	1.00	0120																										
2169342	1.00	0124			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2169343	1.00	0127			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0131																										
ZZZZZZ	1.00	0135																										
ZZZZZZ	1.00	0139																										
ZZZZZZ	1.00	0142																										
ZZZZZZ	1.00	0146																										
ZZZZZZ	1.00	0150																										
CCV1	1.00	0153			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0157			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0201			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0204																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	1.00	0212																										
ZZZZZZ	1.00	0216																										
ZZZZZZ	1.00	0219																										
ZZZZZZ	1.00	0223																										
ZZZZZZ	1.00	0227																										
ZZZZZZ	1.00	0230																										
ZZZZZZ	1.00	0234																										

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0238																										
ZZZZZZ	1.00	0241																										
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0249																										
ZZZZZZ	1.00	0253																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0300																										
ZZZZZZ	5.00	0304																										
ZZZZZZ	5.00	0308																										
ZZZZZZ	5.00	0311																										
ZZZZZZ	20.00	0315																										
ZZZZZZ	1.00	0319																										
ZZZZZZ	1.00	0322																										
ZZZZZZ	1.00	0326																										
ZZZZZZ	1.00	0330																										
ZZZZZZ	1.00	0334																										
ZZZZZZ	1.00	0337																										
ZZZZZZ	1.00	0341																										
ZZZZZZ	1.00	0345																										
ZZZZZZ	1.00	0349																										
ZZZZZZ	1.00	0352																										
ZZZZZZ	1.00	0356																										
ZZZZZZ	1.00	0400																										
ZZZZZZ	1.00	0404																										
ZZZZZZ	1.00	0408																										
ZZZZZZ	1.00	0412																										
ZZZZZZ	1.00	0415																										
ZZZZZZ	1.00	0419																										
ZZZZZZ	1.00	0423																										
ZZZZZZ	1.00	0427																										
ZZZZZZ	1.00	0430																										
CCB5	1.00	0434			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV7	1.00	0441			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0445																										
ZZZZZZ	1.00	0449																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
2067191001	1.00	0453			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2067191002	1.00	0456			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2067191003	1.00	0500			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0504																										
ZZZZZZ	1.00	0508																										
ZZZZZZ	1.00	0512																										
ZZZZZZ	1.00	0515																										
ZZZZZZ	5.00	0519																										
CCV8	1.00	0523			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	0526			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0530			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0534																										
ZZZZZZ	1.00	0538																										
ZZZZZZ	1.00	0541																										
ZZZZZZ	1.00	0545																										
ZZZZZZ	1.00	0549																										
ZZZZZZ	1.00	0553																										
ZZZZZZ	5.00	0556																										
ZZZZZZ	1.00	0600																										
ZZZZZZ	1.00	0604																										
ZZZZZZ	1.00	0608																										
ZZZZZZ	1.00	0611																										
ZZZZZZ	1.00	0615																										
ZZZZZZ	1.00	0619																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A042815B 002

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	00:24																									
BLK	1.00	00:28					X																				
STANDARD 1	1.00	00:32					X																				
STANDARD 2	1.00	00:35					X																				
STANDARD 3	1.00	00:39					X																				
STANDARD 4	1.00	00:43					X																				
STANDARD 5	1.00	00:46					X																				
ICV	1.00	00:50					X																				
ICB1	1.00	00:54					X																				
LLICV	1.00	00:58					X																				
ICS-A1	1.00	01:01					X																				
ICS-AB1	1.00	01:05					X																				
ZZZZZZ	1.00	01:09																									
ZZZZZZ	1.00	01:13																									
ZZZZZZ	1.00	01:16																									
ZZZZZZ	1.00	01:20																									
2169342	1.00	01:24					X																				
2169343	1.00	01:27					X																				
ZZZZZZ	1.00	01:31																									
ZZZZZZ	1.00	01:35																									
ZZZZZZ	1.00	01:39																									
ZZZZZZ	1.00	01:42																									
ZZZZZZ	1.00	01:46																									
ZZZZZZ	1.00	01:50																									
CCV1	1.00	01:53					X																				
CCB1	1.00	01:57					X																				
LLCCV	1.00	02:01					X																				
ZZZZZZ	1.00	02:04																									
ZZZZZZ	1.00	02:08																									
ZZZZZZ	1.00	02:12																									
ZZZZZZ	1.00	02:16																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM023|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-023

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	02:19																									
ZZZZZZ	1.00	02:23																									
ZZZZZZ	1.00	02:27																									
ZZZZZZ	1.00	02:30																									
ZZZZZZ	1.00	02:34																									
ZZZZZZ	1.00	02:38																									
ZZZZZZ	1.00	02:41																									
ZZZZZZ	1.00	02:45																									
ZZZZZZ	1.00	02:49																									
ZZZZZZ	1.00	02:53																									
ZZZZZZ	1.00	02:56																									
ZZZZZZ	1.00	03:00																									
ZZZZZZ	5.00	03:04																									
ZZZZZZ	5.00	03:08																									
ZZZZZZ	5.00	03:11																									
ZZZZZZ	20.00	03:15																									
ZZZZZZ	1.00	03:19																									
ZZZZZZ	1.00	03:22																									
ZZZZZZ	1.00	03:26																									
ZZZZZZ	1.00	03:30																									
ZZZZZZ	1.00	03:34																									
ZZZZZZ	1.00	03:37																									
ZZZZZZ	1.00	03:41																									
ZZZZZZ	1.00	03:45																									
ZZZZZZ	1.00	03:49																									
ZZZZZZ	1.00	03:52																									
ZZZZZZ	1.00	03:56																									
ZZZZZZ	1.00	04:00																									
ZZZZZZ	1.00	04:04																									
ZZZZZZ	1.00	04:08																									
ZZZZZZ	1.00	04:12																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM023|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-023

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	04:15																										
ZZZZZZ	1.00	04:19																										
ZZZZZZ	1.00	04:23																										
ZZZZZZ	1.00	04:27																										
ZZZZZZ	1.00	04:30																										
CCB5	1.00	04:34					X																					
LLCCV	1.00	04:38					X																					
CCV7	1.00	04:41					X																					
ZZZZZZ	1.00	04:45																										
ZZZZZZ	1.00	04:49																										
2067191001	1.00	04:53					X																					
2067191002	1.00	04:56					X																					
2067191003	1.00	05:00					X																					
ZZZZZZ	5.00	05:04																										
ZZZZZZ	1.00	05:08																										
ZZZZZZ	1.00	05:12																										
ZZZZZZ	1.00	05:15																										
ZZZZZZ	5.00	05:19																										
CCV8	1.00	05:23					X																					
CCB6	1.00	05:26					X																					
LLCCV	1.00	05:30					X																					
ZZZZZZ	1.00	05:34																										
ZZZZZZ	1.00	05:38																										
ZZZZZZ	1.00	05:41																										
ZZZZZZ	1.00	05:45																										
ZZZZZZ	1.00	05:49																										
ZZZZZZ	1.00	05:53																										
ZZZZZZ	5.00	05:56																										
ZZZZZZ	1.00	06:00																										
ZZZZZZ	1.00	06:04																										
ZZZZZZ	1.00	06:08																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM023|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-023

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A042815B 002

Start Date: 4/28/2015 **End Date:** 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	06:11																									
ZZZZZZ	1.00	06:15																									
ZZZZZZ	1.00	06:19																									

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.0999	0.1000	100		90 - 110	M	4/28/2015	00:50	A042815B 0
	Arsenic	0.0989	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	00:50	A042815B 0
	Beryllium	0.0968	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cadmium	0.0936	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Chromium	0.0969	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Cobalt	0.0971	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Copper	0.0967	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Lead	0.0972	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
	Manganese	0.0975	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Molybdenum	0.0982	0.1000	98		90 - 110	M	4/28/2015	00:50	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Selenium	0.0992	0.1000	99		90 - 110	M	4/28/2015	00:50	A042815B 0
	Silver	0.0944	0.1000	94		90 - 110	M	4/28/2015	00:50	A042815B 0
	Thallium	0.0953	0.1000	95		90 - 110	M	4/28/2015	00:50	A042815B 0
	Vanadium	0.0974	0.1000	97		90 - 110	M	4/28/2015	00:50	A042815B 0
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	00:58	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	00:58	A042815B 0
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/28/2015	00:58	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	00:58	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Manganese	0.0048	0.0050	96		70 - 130	M	4/28/2015	00:58	A042815B 0
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	4/28/2015	00:58	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	00:58	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	00:58	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	00:58	A042815B 0

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1009	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Arsenic	0.0994	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Barium	0.0971	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Beryllium	0.0943	0.1000	94		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cadmium	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Chromium	0.0991	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Cobalt	0.0998	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Copper	0.0996	0.1000	100		90 - 110	M	4/28/2015	01:53	A042815B 0
	Lead	0.0992	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
	Manganese	0.1007	0.1000	101		90 - 110	M	4/28/2015	01:53	A042815B 0
	Molybdenum	0.0981	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Nickel	0.0969	0.1000	97		90 - 110	M	4/28/2015	01:53	A042815B 0
	Selenium	0.0979	0.1000	98		90 - 110	M	4/28/2015	01:53	A042815B 0
	Silver	0.0955	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Thallium	0.0957	0.1000	96		90 - 110	M	4/28/2015	01:53	A042815B 0
	Vanadium	0.0993	0.1000	99		90 - 110	M	4/28/2015	01:53	A042815B 0
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Barium	0.0049	0.0050	98		70 - 130	M	4/28/2015	02:01	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Chromium	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	02:01	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	02:01	A042815B 0
	Selenium	0.0050	0.0050	100		70 - 130	M	4/28/2015	02:01	A042815B 0
	Silver	0.0019	0.0020	95		70 - 130	M	4/28/2015	02:01	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	02:01	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	02:01	A042815B 0

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	04:38	A042815B 0
	Barium	0.0050	0.0050	100		70 - 130	M	4/28/2015	04:38	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Chromium	0.0017	0.0020	85		70 - 130	M	4/28/2015	04:38	A042815B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Copper	0.0045	0.0050	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Nickel	0.0047	0.0050	94		70 - 130	M	4/28/2015	04:38	A042815B 0
	Selenium	0.0053	0.0050	106		70 - 130	M	4/28/2015	04:38	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	04:38	A042815B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	4/28/2015	04:38	A042815B 0
CCV										
	Antimony	0.0994	0.1000	99		90 - 110	M	4/28/2015	04:41	A042815B 0
	Arsenic	0.0976	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Barium	0.0964	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Beryllium	0.0909	0.1000	91		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cadmium	0.0955	0.1000	96		90 - 110	M	4/28/2015	04:41	A042815B 0
	Chromium	0.0974	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Cobalt	0.0967	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Copper	0.0972	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Lead	0.0973	0.1000	97		90 - 110	M	4/28/2015	04:41	A042815B 0
	Manganese	0.0995	0.1000	100		90 - 110	M	4/28/2015	04:41	A042815B 0
	Molybdenum	0.0975	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0
	Nickel	0.0948	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Selenium	0.0953	0.1000	95		90 - 110	M	4/28/2015	04:41	A042815B 0
	Silver	0.0938	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Thallium	0.0945	0.1000	94		90 - 110	M	4/28/2015	04:41	A042815B 0
	Vanadium	0.0978	0.1000	98		90 - 110	M	4/28/2015	04:41	A042815B 0

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0975	0.1000	98		90 - 110	M	4/28/2015	05:23	A042815B 0
	Arsenic	0.0945	0.1000	94		90 - 110	M	4/28/2015	05:23	A042815B 0
	Barium	0.0956	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Beryllium	0.0899	0.1000	90		90 - 110	M	4/28/2015	05:23	A042815B 0
	Cadmium	0.0973	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Chromium	0.0958	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Cobalt	0.0960	0.1000	96		90 - 110	M	4/28/2015	05:23	A042815B 0
	Copper	0.0954	0.1000	95		90 - 110	M	4/28/2015	05:23	A042815B 0
	Lead	0.0970	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Manganese	0.0980	0.1000	98		90 - 110	M	4/28/2015	05:23	A042815B 0
	Molybdenum	0.0966	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
	Nickel	0.0932	0.1000	93		90 - 110	M	4/28/2015	05:23	A042815B 0
	Selenium	0.0948	0.1000	95		90 - 110	M	4/28/2015	05:23	A042815B 0
	Silver	0.0931	0.1000	93		90 - 110	M	4/28/2015	05:23	A042815B 0
	Thallium	0.0941	0.1000	94		90 - 110	M	4/28/2015	05:23	A042815B 0
	Vanadium	0.0966	0.1000	97		90 - 110	M	4/28/2015	05:23	A042815B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/28/2015	05:30	A042815B 0
	Barium	0.0051	0.0050	102		70 - 130	M	4/28/2015	05:30	A042815B 0
	Beryllium	0.0009	0.0010	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Cadmium	0.0009	0.0010	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/28/2015	05:30	A042815B 0
	Copper	0.0046	0.0050	92		70 - 130	M	4/28/2015	05:30	A042815B 0
	Lead	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Manganese	0.0048	0.0050	96		70 - 130	M	4/28/2015	05:30	A042815B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	4/28/2015	05:30	A042815B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	4/28/2015	05:30	A042815B 0
	Selenium	0.0054	0.0050	108		70 - 130	M	4/28/2015	05:30	A042815B 0
	Silver	0.0018	0.0020	90		70 - 130	M	4/28/2015	05:30	A042815B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	4/28/2015	05:30	A042815B 0
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/28/2015	05:30	A042815B 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	00:54	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	00:54	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	00:54	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	00:54	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	00:54	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	00:54	A042815B 002
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	01:57	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	01:57	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	01:57	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	01:57	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	01:57	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	01:57	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	04:34	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	04:34	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	04:34	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	04:34	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	04:34	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	04:34	A042815B 002

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/28/2015	05:26	A042815B 002
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/28/2015	05:26	A042815B 002
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/28/2015	05:26	A042815B 002
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/28/2015	05:26	A042815B 002
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/28/2015	05:26	A042815B 002
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/28/2015	05:26	A042815B 002

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169342			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	4/28/2015	01:24	A042815B 0024
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	4/28/2015	01:24	A042815B 0024
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	4/28/2015	01:24	A042815B 0024
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	4/28/2015	01:24	A042815B 0024
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	4/28/2015	01:24	A042815B 0024
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	4/28/2015	01:24	A042815B 0024
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	4/28/2015	01:24	A042815B 0024

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Arsenic	0.0002				-0.00300 - -0.00300	4/28/2015	01:01	A042815B 00
	Barium	0.0004				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Cadmium	0.0009				-0.00100 - -0.00100	4/28/2015	01:01	A042815B 00
	Chromium	0.0004				-0.00400 - -0.00400	4/28/2015	01:01	A042815B 00
	Cobalt	0.0006				-0.00600 - -0.00600	4/28/2015	01:01	A042815B 00
	Copper	0.0012				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Lead	0.0003				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Manganese	0.0011				-0.01000 - -0.01000	4/28/2015	01:01	A042815B 00
	Molybdenum	1.9839	2.00000	99		80 - 120%	4/28/2015	01:01	A042815B 00
	Nickel	0.0007				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Selenium	0.0001				-0.00500 - -0.00500	4/28/2015	01:01	A042815B 00
	Silver	0.0004				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:01	A042815B 00
	Vanadium	0.0002				-0.00200 - -0.00200	4/28/2015	01:01	A042815B 00
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Arsenic	0.0190	0.02000	95		80 - 120%	4/28/2015	01:05	A042815B 00
	Barium	0.0003				-0.00500 - -0.00500	4/28/2015	01:05	A042815B 00
	Beryllium	0.00001				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Cadmium	0.0090	0.01000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Chromium	0.0174	0.02000	87		80 - 120%	4/28/2015	01:05	A042815B 00
	Cobalt	0.0360	0.04000	90		80 - 120%	4/28/2015	01:05	A042815B 00
	Copper	0.0173	0.02000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Lead	0.0002				-0.00200 - -0.00200	4/28/2015	01:05	A042815B 00
	Manganese	0.0184	0.02000	92		80 - 120%	4/28/2015	01:05	A042815B 00
	Molybdenum	1.9732	2.00000	99		80 - 120%	4/28/2015	01:05	A042815B 00
	Nickel	0.0345	0.04000	86		80 - 120%	4/28/2015	01:05	A042815B 00
	Selenium	0.0182	0.02000	91		80 - 120%	4/28/2015	01:05	A042815B 00
	Silver	0.0168	0.02000	84		80 - 120%	4/28/2015	01:05	A042815B 00
	Thallium	0.00002				-0.001000 - -0.001000	4/28/2015	01:05	A042815B 00
	Vanadium	0.0378	0.04000	94		80 - 120%	4/28/2015	01:05	A042815B 00

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169343									
	Antimony	mg/L	0.2220	0.2186		98		80 - 120	M
	Arsenic	mg/L	0.2220	0.2074		93		80 - 120	M
	Barium	mg/L	2.2220	2.3596		106		80 - 120	M
	Beryllium	mg/L	0.2220	0.2029		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2159		97		80 - 120	M
	Chromium	mg/L	0.2220	0.2193		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2238		101		80 - 120	M
	Copper	mg/L	0.2220	0.2169		98		80 - 120	M
	Lead	mg/L	0.2220	0.2219		100		80 - 120	M
	Manganese	mg/L	0.2220	0.2277		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2181		98		80 - 120	M
	Nickel	mg/L	0.2220	0.2367		107		80 - 120	M
	Selenium	mg/L	0.2220	0.1933		87		80 - 120	M
	Silver	mg/L	0.1110	0.1116		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2163		97		80 - 120	M
	Vanadium	mg/L	0.2220	0.2189		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69439						
2169342	MB for HBN 69439 [MDIG/50539	MB	QC-WAT	4/27/15	45.0	50.0	
2169343	LCS for HBN 69439 [MDIG/50539	LCS	QC-WAT	4/27/15	45.0	50.0	
2067191001	MRC-MW-57A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191002	MRC-MW-59A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191003	MRC-MW-49A-042415	SAM	WATER	4/27/15	45.0	50.0	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0024												
BLK	BLK	0028	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0032	101		103		101		100		101		103	
STANDARD 2	STANDARD 2	0035	98		98		99		98		99		99	
STANDARD 3	STANDARD 3	0039	100		102		102		100		100		103	
STANDARD 4	STANDARD 4	0043	98		98		98		97		101		100	
STANDARD 5	STANDARD 5	0046	100		100		100		100		101		101	
ICV	ICV	0050	98		97		97		98		101		99	
ICB1	ICB	0054	90		90		89		89		99		99	
LLICV	LLICV	0058	98		96		95		96		99		99	
ICS-A1	ICSA	0101	89		98		93		98		103		103	
ICS-AB1	ICSAB	0105	92		102		95		101		106		108	
CHECK	ZZZZZZ	0109												
CHECK	ZZZZZZ	0113												
2169338	ZZZZZZ	0116												
2169339	ZZZZZZ	0120												
2169342	MB for HBN 69439	0124	100		107		100		97		94		106	
2169343	LCS for HBN 6943	0127	99		102		100		97		91		104	
2067214003	ZZZZZZ	0131												
2067214005	ZZZZZZ	0135												
2067214007	ZZZZZZ	0139												
2067214009	ZZZZZZ	0142												
2067214011	ZZZZZZ	0146												
2067214013	ZZZZZZ	0150												
CCV1	CCV	0153	101		103		101		99		99		102	
CCB1	CCB	0157	101		104		102		99		97		105	
LLCCV	LLCCV	0201	99		100		98		98		100		99	
2169342	ZZZZZZ	0204												
2067214015	ZZZZZZ	0208												
2067214016	ZZZZZZ	0212												
2066753001	ZZZZZZ	0216												
2066753002	ZZZZZZ	0219												
2066753003	ZZZZZZ	0223												
2066753004	ZZZZZZ	0227												
2066872001	ZZZZZZ	0230												
2066872002	ZZZZZZ	0234												
2066872003	ZZZZZZ	0238												
CCV2	ZZZZZZ	0241												
CCV3	ZZZZZZ	0245												
CCB2	ZZZZZZ	0249												
LLCCV	ZZZZZZ	0253												
2066872004	ZZZZZZ	0256												
2066872005	ZZZZZZ	0300												
2067214009	ZZZZZZ	0304												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2066872002	ZZZZZZ	0308												
2066872004	ZZZZZZ	0311												
2066872005	ZZZZZZ	0315												
2066604002	ZZZZZZ	0319												
2066604004	ZZZZZZ	0322												
2066604005	ZZZZZZ	0326												
CHECK	ZZZZZZ	0330												
CCV4	ZZZZZZ	0334												
CCB3	ZZZZZZ	0337												
LLCCV	ZZZZZZ	0341												
CCV5	ZZZZZZ	0345												
2066604006	ZZZZZZ	0349												
2066604006	ZZZZZZ	0352												
2169340	ZZZZZZ	0356												
2169341	ZZZZZZ	0400												
2066604007	ZZZZZZ	0404												
2066900002	ZZZZZZ	0408												
2066900002S	ZZZZZZ	0412												
2066900002S	ZZZZZZ	0415												
2066900003	ZZZZZZ	0419												
2066900004	ZZZZZZ	0423												
CCV6	ZZZZZZ	0427												
CCB4	ZZZZZZ	0430												
CCB5	CCB	0434	103		107		106		103		100		103	
LLCCV	LLCCV	0438	101		102		103		102		99		99	
CCV7	CCV	0441	103		104		104		102		100		102	
2066900005	ZZZZZZ	0445												
2066900006	ZZZZZZ	0449												
2067191001	MRC-MW-57A-04241	0453	77		105		89		99		114		109	
2067191002	MRC-MW-59A-04241	0456	87		100		94		100		103		105	
2067191003	MRC-MW-49A-04241	0500	77		105		94		108		128		116	
2066900004	ZZZZZZ	0504												
2067212002	ZZZZZZ	0508												
2067212003	ZZZZZZ	0512												
2067212007	ZZZZZZ	0515												
2067212007L	ZZZZZZ	0519												
CCV8	CCV	0523	106		107		108		107		108		108	
CCB6	CCB	0526	110		110		111		109		99		110	
LLCCV	LLCCV	0530	105		109		107		105		102		105	
2067212007P	ZZZZZZ	0534												
2067213002	ZZZZZZ	0538												
2067213003	ZZZZZZ	0541												
2067213004	ZZZZZZ	0545												
2067213005	ZZZZZZ	0549												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067213006	ZZZZZZ	0553												
2067213006L	ZZZZZZ	0556												
2067213006P	ZZZZZZ	0600												
2067213007	ZZZZZZ	0604												
CCV9	ZZZZZZ	0608												
CCB7	ZZZZZZ	0611												
LLCCV	ZZZZZZ	0615												
CCV10	ZZZZZZ	0619												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0024												
BLK	0028	100											
STANDARD 1	0032	101											
STANDARD 2	0035	99											
STANDARD 3	0039	102											
STANDARD 4	0043	98											
STANDARD 5	0046	101											
ICV	0050	98											
ICB	0054	89											
LLICV	0058	95											
ICSA	0101	99											
ICSAB	0105	102											
ZZZZZZ	0109												
ZZZZZZ	0113												
ZZZZZZ	0116												
ZZZZZZ	0120												
MB for HBN 69439	0124	102											
LCS for HBN 6943	0127	103											
ZZZZZZ	0131												
ZZZZZZ	0135												
ZZZZZZ	0139												
ZZZZZZ	0142												
ZZZZZZ	0146												
ZZZZZZ	0150												
CCV	0153	102											
CCB	0157	102											
LLCCV	0201	99											
ZZZZZZ	0204												
ZZZZZZ	0208												
ZZZZZZ	0212												
ZZZZZZ	0216												
ZZZZZZ	0219												
ZZZZZZ	0223												
ZZZZZZ	0227												
ZZZZZZ	0230												
ZZZZZZ	0234												
ZZZZZZ	0238												
ZZZZZZ	0241												
ZZZZZZ	0245												
ZZZZZZ	0249												
ZZZZZZ	0253												
ZZZZZZ	0256												
ZZZZZZ	0300												
ZZZZZZ	0304												
ZZZZZZ	0308												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0311												
ZZZZZZ	0315												
ZZZZZZ	0319												
ZZZZZZ	0322												
ZZZZZZ	0326												
ZZZZZZ	0330												
ZZZZZZ	0334												
ZZZZZZ	0337												
ZZZZZZ	0341												
ZZZZZZ	0345												
ZZZZZZ	0349												
ZZZZZZ	0352												
ZZZZZZ	0356												
ZZZZZZ	0400												
ZZZZZZ	0404												
ZZZZZZ	0408												
ZZZZZZ	0412												
ZZZZZZ	0415												
ZZZZZZ	0419												
ZZZZZZ	0423												
ZZZZZZ	0427												
ZZZZZZ	0430												
CCB	0434	105											
LLCCV	0438	102											
CCV	0441	104											
ZZZZZZ	0445												
ZZZZZZ	0449												
MRC-MW-57A-04241	0453	92											
MRC-MW-59A-04241	0456	97											
MRC-MW-49A-04241	0500	98											
ZZZZZZ	0504												
ZZZZZZ	0508												
ZZZZZZ	0512												
ZZZZZZ	0515												
ZZZZZZ	0519												
CCV	0523	106											
CCB	0526	110											
LLCCV	0530	107											
ZZZZZZ	0534												
ZZZZZZ	0538												
ZZZZZZ	0541												
ZZZZZZ	0545												
ZZZZZZ	0549												
ZZZZZZ	0553												
ZZZZZZ	0556												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM023|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-023

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/28/2015 End Date: 04/28/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0600												
ZZZZZZ	0604												
ZZZZZZ	0608												
ZZZZZZ	0611												
ZZZZZZ	0615												
ZZZZZZ	0619												

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- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-023 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2067191001	MRC-MW-57A-042415	
2067191002	MRC-MW-59A-042415	
2067191003	MRC-MW-49A-042415	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69443						
2169364	MB for HBN 69443 [MDIG/50543	MB	QC-WAT	4/27/15	45.0	50.0	
2169365	LCS for HBN 69443 [MDIG/50543	LCS	QC-WAT	4/27/15	45.0	50.0	
2067191001	MRC-MW-57A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191002	MRC-MW-59A-042415	SAM	WATER	4/27/15	45.0	50.0	
2067191003	MRC-MW-49A-042415	SAM	WATER	4/27/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0829												X																
ICAL2	1.00	0833												X																
ICAL3	1.00	0836												X																
ICAL4	1.00	0839												X																
ICAL5	1.00	0842												X																
ICV1	1.00	0845												X																
ICB1	1.00	0848												X																
CRDL1	1.00	0851												X																
CCV1	1.00	0855												X																
HIGH	1.00	0857												X																
ICS-A1	1.00	0900												X																
ICS-AB1	1.00	0903												X																
ZZZZZZ	200.00	0930																												
ZZZZZZ	50.00	0934																												
ZZZZZZ	20.00	0937																												
ZZZZZZ	5.00	0941																												
ZZZZZZ	5.00	0944																												
ZZZZZZ	100.00	0947																												
ZZZZZZ	1.00	0950																												
ZZZZZZ	1.00	0953																												
ZZZZZZ	1.00	0956																												
ZZZZZZ	1.00	0959																												
ZZZZZZ	1.00	1002																												
ZZZZZZ	1.00	1005																												
ZZZZZZ	1.00	1008																												
ZZZZZZ	1.00	1012																												
ZZZZZZ	1.00	1015																												
ZZZZZZ	1.00	1018																												
ZZZZZZ	1.00	1021																												
ZZZZZZ	1.00	1024																												
ZZZZZZ	1.00	1027																												
ZZZZZZ	1.00	1030																												
ZZZZZZ	1.00	1034																												
ZZZZZZ	1.00	1037																												
ZZZZZZ	1.00	1040																												
ZZZZZZ	1.00	1043																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1046																									
ZZZZZZ	1.00	1049																									
ZZZZZZ	1.00	1052																									
ZZZZZZ	1.00	1055																									
ZZZZZZ	1.00	1059																									
ZZZZZZ	1.00	1102																									
ZZZZZZ	1.00	1105																									
ZZZZZZ	1.00	1108																									
ZZZZZZ	1.00	1111																									
ZZZZZZ	1.00	1114																									
ZZZZZZ	1.00	1118																									
ZZZZZZ	1.00	1120																									
ZZZZZZ	1.00	1124																									
ZZZZZZ	2.00	1127																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	10.00	1156																									
ZZZZZZ	10.00	1159																									
ZZZZZZ	1.00	1202																									
ZZZZZZ	1.00	1206																									
CCV5	1.00	1209											X														
CCB4	1.00	1212											X														
2169364	1.00	1215											X														
2169365	1.00	1218											X														
ZZZZZZ	1.00	1221																									
ZZZZZZ	1.00	1224																									
ZZZZZZ	1.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1233																									
2067191001	1.00	1236											X														
2067191002	1.00	1239											X														
2067191003	1.00	1243											X														
CCV6	1.00	1246											X														
ZZZZZZ	1.00	1249																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB6	1.00	1259												X													
ZZZZZZ	1.00	1302																									
ZZZZZZ	10.00	1306																									
ZZZZZZ	20.00	1309																									
ZZZZZZ	5.00	1312																									
ZZZZZZ	5.00	1316																									
ZZZZZZ	5.00	1319																									
ZZZZZZ	5.00	1322																									
ZZZZZZ	100.00	1325																									
ZZZZZZ	100.00	1329																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	5.00	1407																									
ZZZZZZ	100.00	1410																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1449																									
ZZZZZZ	100.00	1454																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1500																									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1507																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1519																									
CCV9	1.00	1523												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042815A 3015

Start Date: 4/28/2015 End Date: 4/28/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB10	1.00	1525												X													
ZZZZZZ	1.00	1532																									
LLCCV	1.00	1543												X													
ICS-A2	1.00	1546												X													
ICS-AB2	1.00	1550												X													

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.953	1.000	95		90 - 110	P	4/28/2015	08:45	042815A 30
CCV	Iron	2.436	2.500	97		90 - 110	P	4/28/2015	08:55	042815A 30
CCV	Iron	2.627	2.500	105		90 - 110	P	4/28/2015	12:09	042815A 30
CCV	Iron	2.637	2.500	105		90 - 110	P	4/28/2015	12:46	042815A 30
CCV	Iron	2.546	2.500	102		90 - 110	P	4/28/2015	15:23	042815A 30
LLCCV	Iron	0.069	0.060	115		70 - 130	P	4/28/2015	15:43	042815A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.066	0.060	110		70 - 130	P	4/28/2015	08:51	042815A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	08:48	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	12:12	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	12:59	042815A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/28/2015	15:25	042815A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2169364			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/28/2015	12:15	042815A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	110.1	125.0	88		80 - 120%	4/28/2015	09:00	042815A 3015
ICSAB									
	Iron	114.5	125.0	92		80 - 120%	4/28/2015	09:03	042815A 3015
ICSA									
	Iron	115.3	125.0	92		80 - 120%	4/28/2015	15:46	042815A 3015
ICSAB									
	Iron	118.9	125.0	95		80 - 120%	4/28/2015	15:50	042815A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2169365									
	Iron	mg/L	1.11	1.157		104		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-023 Method Type: 7470A SOW No.:

Contract: TMM023|112IC06247 Lab Code: CAS Case No.: SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2067191001	MRC-MW-57A-042415	
2067191002	MRC-MW-59A-042415	
2067191003	MRC-MW-49A-042415	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: Lisa Miller

Date: Title: Metals Manager

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1312																X								
Standard #1 (0.2ppb	1.00	1313																X								
	1.00	1314																X								
	1.00	1315																X								
	1.00	1317																X								
	1.00	1318																X								
ICV1	1.00	1319																X								
ICB1	1.00	1320																X								
ZZZZZZ	1.00	1321																								
ZZZZZZ	1.00	1322																								
ZZZZZZ	1.00	1323																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1325																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	1.00	1327																								
ZZZZZZ	1.00	1328																								
ZZZZZZ	1.00	1329																								
ZZZZZZ	1.00	1330																								
ZZZZZZ	1.00	1332																								
ZZZZZZ	1.00	1333																								
ZZZZZZ	1.00	1334																								
ZZZZZZ	1.00	1335																								
ZZZZZZ	1.00	1336																								
ZZZZZZ	1.00	1337																								
ZZZZZZ	1.00	1338																								
ZZZZZZ	1.00	1339																								
ZZZZZZ	1.00	1340																								
ZZZZZZ	1.00	1341																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1343																								
ZZZZZZ	1.00	1344																								
ZZZZZZ	1.00	1345																								
ZZZZZZ	1.00	1346																								
ZZZZZZ	1.00	1348																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1350																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1408																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1416																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1426																									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																						
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1430																								
ZZZZZZ	1.00	1431																								
ZZZZZZ	1.00	1432																								
ZZZZZZ	1.00	1433																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	1.00	1435																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1438																								
ZZZZZZ	1.00	1439																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1441																								
ZZZZZZ	1.00	1442																								
ZZZZZZ	1.00	1443																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1445																								
ZZZZZZ	1.00	1446																								
ZZZZZZ	1.00	1447																								
ZZZZZZ	1.00	1448																								
CCV7	1.00	1449																X								
CCB7	1.00	1450																X								
ZZZZZZ	1.00	1451																								
ZZZZZZ	1.00	1452																								
ZZZZZZ	1.00	1453																								
2171363	1.00	1455																X								
2171364	1.00	1456																X								
ZZZZZZ	1.00	1457																								
ZZZZZZ	1.00	1458																								
ZZZZZZ	1.00	1459																								
ZZZZZZ	1.00	1500																								
ZZZZZZ	1.00	1501																								
CCV8	1.00	1502																X								
CCB8	1.00	1503																X								
ZZZZZZ	1.00	1504																								
ZZZZZZ	1.00	1505																								
ZZZZZZ	1.00	1506																								
ZZZZZZ	1.00	1507																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM023|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-023

Instrument ID Number: Cetac Hg Method: CV Run Number: 043015W

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1508																										
ZZZZZZ	1.00	1509																										
ZZZZZZ	1.00	1511																										
2067191001	1.00	1512																X										
2067191002	1.00	1513																X										
2067191003	1.00	1514																X										
CCV9	1.00	1515																X										
CCB9	1.00	1516																X										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1519																										
ZZZZZZ	1.00	1520																										
ZZZZZZ	1.00	1521																										
ZZZZZZ	1.00	1522																										
ZZZZZZ	1.00	1524																										
ZZZZZZ	1.00	1525																										
ZZZZZZ	1.00	1526																										
ZZZZZZ	1.00	1527																										
ZZZZZZ	1.00	1528																										
ZZZZZZ	1.00	1529																										
ZZZZZZ	1.00	1530																										
ZZZZZZ	1.00	1531																										
ZZZZZZ	1.00	1532																										
ZZZZZZ	1.00	1533																										
ZZZZZZ	1.00	1534																										
ZZZZZZ	1.00	1536																										
ZZZZZZ	1.00	1537																										

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	13:19	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	14:49	043015W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	4/30/2015	15:02	043015W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	4/30/2015	15:15	043015W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	13:20	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	14:50	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	15:03	043015W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	4/30/2015	15:16	043015W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171363			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	4/30/2015	14:55	043015W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171364									
	Mercury	mg/L	0.0020	0.0022		110		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-023

Contract: TMM023|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70338						
2171363	MB for HBN 70338 [MDIG/50619	MB	QC-WAT	4/30/15	25.0	25.0	
2171364	LCS for HBN 70338 [MDIG/50619	LCS	QC-WAT	4/30/15	25.0	25.0	
2067191001	MRC-MW-57A-042415	SAM	WATER	4/30/15	25.0	25.0	
2067191002	MRC-MW-59A-042415	SAM	WATER	4/30/15	25.0	25.0	
2067191003	MRC-MW-49A-042415	SAM	WATER	4/30/15	25.0	25.0	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/PCB/TOTAL METALS/PERCHLORATE LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) SDG 2067368R**

SAMPLES:

5/Aqueous/VOCs

MRC-MW-113A-042715	MRC-MW-38A-042715	MRC-MW-38B-042715
MRC-MW-DUP03-042715	TB-042715	

2/Aqueous/SVOCs/PCBs

MRC-MW-113A-042715	MRC-MW-DUP03-042715

1/Aqueous/Metals

MRC-MW-105A-042715

3/Aqueous/Perchlorate

MRC-MW-113A-042715	MRC-MW-38A-042715	MRC-MW-DUP03-042715

Overview

The sample set for LMC-MRC, SDG 2067368R consisted of five (5) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), 1,4-dioxane, polychlorinated biphenyl (PCB) homologs, select total metals, and/or perchlorate. The trip blank was analyzed for VOCs. One field duplicate sample pair was included in this SDG: MRC-MW-113A-042715 / MRC-MW-DUP03-042715.

The samples were collected by Tetra Tech, Inc. on April 27, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6850, 6020A/6010C, 7470A and EPA Methods 522 and 680 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

No major issues were noted.

Minor

- The following compounds were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane	0.6	3.0
Carbon Disulfide	0.38	1.9
1,4-Dichlorobenzene	0.27	1.35

Maximum concentration detected in the method blank 2170306 affecting samples MRC-MW-113A-042715 and MRC-MW-DUP03-042715.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Detected results reported below the established action levels were qualified as non-detected, (U), due to blank contamination. The trip blank was not qualified for blank contamination.

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

Samples MRC-MW-113A-042715 and MRC-MW-DUP03-042715 were analyzed at 1X and 20X dilution for VOCs. Results were reported from the 20X dilution for 1,2,3-trichlorbenzene and trichlorofluoromethane.

One SVOC surrogate (terphenyl-d14) was greater than the QC limit. No action was taken.

Executive Summary

Laboratory Performance: Three VOCs were detected in the laboratory method blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-MW-113A-042715			MRC-MW-113A-042715-DL			MRC-MW-38A-042715			MRC-MW-38B-042715		
SDG: 2067368R	LAB_ID	2067368002			2067368002			2067368005			2067368006		
FRACTION: OV	SAMP_DATE	4/27/2015			4/27/2015			4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U		0.26	U	
1,1-DICHLOROETHANE		1.8						0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.36	J	P				0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		43						0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE					131			0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U					1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U					0.28	U		0.28	U	
1,2-DICHLOROBENZENE		13.8						0.38	U		0.38	U	
1,2-DICHLOROETHANE		1.2						0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U					0.24	U		0.24	U	
1,3-DICHLOROBENZENE		17.5						0.25	U		0.25	U	
1,4-DICHLOROBENZENE		37.7						0.27	U		0.27	U	
1,4-DIOXANE		58.9	U					58.9	U		58.9	U	
2-BUTANONE		1.8	U					1.8	U		1.8	U	
2-HEXANONE		1.3	U					1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U					1.5	U		1.5	U	
ACETONE		3.1	U					3.1	U		3.1	U	
BENZENE		0.48	J	P				0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U					0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U					0.27	U		0.27	U	
BROMOFORM		0.4	U					0.4	U		0.4	U	
BROMOMETHANE		0.51	U	A				0.5	U	A	0.55	U	A
CARBON DISULFIDE		0.23	U					0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.95	J	P				0.31	U		0.31	U	
CHLOROBENZENE		33						0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U					0.45	U		0.45	U	
CHLOROETHANE		0.33	U					0.33	U		0.33	U	
CHLOROFORM		1.1						9.9			0.21	U	
CHLOROMETHANE		0.31	U					0.31	J	P	0.31	U	
CIS-1,2-DICHLOROETHENE		9.5						0.32	U		0.33	J	P
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U		0.31	U	
CYCLOHEXANE		0.29	U					0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP03-042715			MRC-MW-DUP03-042715-DL			TB-042715		
SDG: 2067368R	LAB_ID	2067368003			2067368003			2067368001		
FRACTION: OV	SAMP_DATE	4/27/2015			4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF	MRC-MW-113A-042715			MRC-MW-113A-042715					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U	
1,1-DICHLOROETHANE		1.6						0.28	U	
1,1-DICHLOROETHENE		0.3	J	P				0.29	U	
1,2,3-TRICHLOROBENZENE		43.3						0.93	U	
1,2,4-TRICHLOROBENZENE					133			0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U					1.5	U	
1,2-DIBROMOETHANE		0.28	U					0.28	U	
1,2-DICHLOROBENZENE		13.5						0.38	U	
1,2-DICHLOROETHANE		1.1						0.32	U	
1,2-DICHLOROPROPANE		0.24	U					0.24	U	
1,3-DICHLOROBENZENE		17.4						0.25	U	
1,4-DICHLOROBENZENE		37.5						0.27	U	
1,4-DIOXANE		58.9	U					58.9	U	
2-BUTANONE		1.8	U					1.8	U	
2-HEXANONE		1.3	U					1.3	U	
4-METHYL-2-PENTANONE		1.5	U					1.5	U	
ACETONE		3.1	U					3.1	U	
BENZENE		0.46	J	P				0.23	U	
BROMOCHLOROMETHANE		0.32	U					0.32	U	
BROMODICHLOROMETHANE		0.27	U					0.27	U	
BROMOFORM		0.4	U					0.4	U	
BROMOMETHANE		0.59	U	A				0.6	J	P
CARBON DISULFIDE		0.23	U					0.23	U	
CARBON TETRACHLORIDE		0.86	J	P				0.31	U	
CHLOROBENZENE		32.1						0.19	U	
CHLORODIBROMOMETHANE		0.45	U					0.45	U	
CHLOROETHANE		0.33	U					0.33	U	
CHLOROFORM		0.97	J	P				0.21	U	
CHLOROMETHANE		0.31	U					0.31	U	
CIS-1,2-DICHLOROETHENE		8.4						0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U	
CYCLOHEXANE		0.29	U					0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-113A-042715			MRC-MW-113A-042715-DL			MRC-MW-38A-042715			MRC-MW-38B-042715		
SDG: 2067368R	LAB_ID	2067368002			2067368002			2067368005			2067368006		
FRACTION: OV	SAMP_DATE	4/27/2015			4/27/2015			4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U		0.33	U	
ETHYLBENZENE		0.34	U					0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U					0.22	U		0.22	U	
M+P-XYLENES		0.52	U					0.52	U		0.52	U	
METHYL ACETATE		0.32	U					0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U					0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U					0.45	U		0.45	U	
O-XYLENE		0.33	U					0.33	U		0.33	U	
STYRENE		0.24	U					0.24	U		0.24	U	
TETRACHLOROETHENE		45.7						0.35	U		0.48	J	P
TOLUENE		0.23	U					0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.38	J	P				0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U		0.29	U	
TRICHLOROETHENE		23.5						0.33	U		0.56	J	P
TRICHLOROFLUOROMETHANE					1010			0.24	U		0.24	U	
VINYL CHLORIDE		0.34	J	P				0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP03-042715			MRC-MW-DUP03-042715-DL			TB-042715		
SDG: 2067368R	LAB_ID	2067368003			2067368003			2067368001		
FRACTION: OV	SAMP_DATE	4/27/2015			4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF	MRC-MW-113A-042715			MRC-MW-113A-042715					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U	
ETHYLBENZENE		0.34	U					0.34	U	
ISOPROPYLBENZENE		0.22	U					0.22	U	
M+P-XYLENES		0.52	U					0.52	U	
METHYL ACETATE		0.32	U					0.32	U	
METHYL CYCLOHEXANE		0.3	U					0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U	
METHYLENE CHLORIDE		0.45	U					0.45	U	
O-XYLENE		0.33	U					0.33	U	
STYRENE		0.24	U					0.24	U	
TETRACHLOROETHENE		44.8						0.35	U	
TOLUENE		0.23	U					0.23	U	
TRANS-1,2-DICHLOROETHENE		0.36	J	P				0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U	
TRICHLOROETHENE		22.1						0.33	U	
TRICHLOROFLUOROMETHANE					961			0.24	U	
VINYL CHLORIDE		0.3	U					0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-113A-042715			MRC-MW-DUP03-042715		
SDG: 2067368R	LAB_ID	2067368002			2067368003		
FRACTION: OS	SAMP_DATE	4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				MRC-MW-113A-042715		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		5.4			5.6		

PROJ_NO: 06247	NSAMPLE	MRC-MW-113A-042715			MRC-MW-DUP03-042715		
SDG: 2067368R	LAB_ID	2067368002			2067368003		
FRACTION: PCB	SAMP_DATE	4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				MRC-MW-113A-042715		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DECACHLOROBIPHENYL		0.022	U		0.023	U	
DICHLOROBIPHENYLS		0.0039	U		0.0039	U	
HEPTACHLOROBIPHENYLS		0.011	U		0.011	U	
HEXACHLOROBIPHENYL		0.0087	U		0.0088	U	
MONOCHLOROBIPHENYLS		0.0029	U		0.011		
NONACHLOROBIPHENYLS		0.019	U		0.02	U	
OCTACHLOROBIPHENYLS		0.0097	U		0.0098	U	
PENTACHLOROBIPHENYLS		0.0058	U		0.0059	U	
TETRACHLOROBIPHENYLS		0.0068	U		0.0069	U	
TRICHLOROBIPHENYLS		0.0039	U		0.0039	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-105A-042715		
SDG: 2067368R	LAB_ID	2067368004		
FRACTION: M	SAMP_DATE	4/27/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.001	U	
BARIUM		0.085		
BERYLLIUM		0.0031		
CADMIUM		0.00043	J	P
CHROMIUM		0.00074	U	
COBALT		0.034		
COPPER		0.0085		
IRON		0.024	J	P
LEAD		0.00074	U	
MANGANESE		0.1		
MERCURY		0.00017	U	
MOLYBDENUM		0.00074	U	
NICKEL		0.029		
SELENIUM		0.004	J	P
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-113A-042715			MRC-MW-38A-042715			MRC-MW-DUP03-042715		
SDG: 2067368R	LAB_ID	002			005			003		
FRACTION: MISC	SAMP_DATE	4/27/2015			4/27/2015			4/27/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF							MRC-MW-113A-042715		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERCHLORATE		0.17	J	P	1.1			0.14	J	P

Appendix B

Results as Reported by the Laboratory

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368001** Date Collected: 4/27/2015 00:00 Matrix: Water

Sample ID: **TB-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 04:48	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:48	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:48	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:48	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 04:48	JPA	A
Bromomethane	0.60J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 04:48	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 04:48	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:48	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:48	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/29/15 04:48	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:48	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/29/15 04:48	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:48	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:48	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 04:48	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:48	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/29/15 04:48	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/29/15 04:48	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 04:48	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 04:48	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:48	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:48	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 04:48	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:48	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:48	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 04:48	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 04:48	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 04:48	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:48	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 04:48	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 04:48	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:48	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 04:48	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:48	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368001** Date Collected: 4/27/2015 00:00 Matrix: Water

Sample ID: **TB-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/29/15 04:48	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 04:48	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:48	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 04:48	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/29/15 04:48	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 04:48	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/29/15 04:48	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/29/15 04:48	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 04:48	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 04:48	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 04:48	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 04:48	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/29/15 04:48	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260C		4/29/15 04:48	JPA	A
4-Bromofluorobenzene (S)	97.7		%	79 - 114	SW846 8260C		4/29/15 04:48	JPA	A
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260C		4/29/15 04:48	JPA	A
Toluene-d8 (S)	101		%	76 - 127	SW846 8260C		4/29/15 04:48	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368002** Date Collected: 4/27/2015 09:50 Matrix: Water

Sample ID: **MRC-MW-113A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 08:31	JPA	A
Benzene	0.48J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 08:31	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:31	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 08:31	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 08:31	JPA	A
Bromomethane	0.51J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 08:31	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 08:31	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 08:31	JPA	A
Carbon Tetrachloride	0.95J	J	ug/L	1.0	0.31	SW846 8260C		4/29/15 08:31	JPA	A
Chlorobenzene	33.0		ug/L	1.0	0.19	SW846 8260C		4/29/15 08:31	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 08:31	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 08:31	JPA	A
Chloroform	1.1		ug/L	1.0	0.21	SW846 8260C		4/29/15 08:31	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 08:31	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 08:31	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 08:31	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 08:31	JPA	A
1,2-Dichlorobenzene	13.8		ug/L	1.0	0.38	SW846 8260C		4/29/15 08:31	JPA	A
1,3-Dichlorobenzene	17.5		ug/L	1.0	0.25	SW846 8260C		4/29/15 08:31	JPA	A
1,4-Dichlorobenzene	37.7		ug/L	1.0	0.27	SW846 8260C		4/29/15 08:31	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 08:31	JPA	A
1,1-Dichloroethane	1.8		ug/L	1.0	0.28	SW846 8260C		4/29/15 08:31	JPA	A
1,2-Dichloroethane	1.2		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:31	JPA	A
1,1-Dichloroethene	0.36J	J	ug/L	1.0	0.29	SW846 8260C		4/29/15 08:31	JPA	A
cis-1,2-Dichloroethene	9.5		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:31	JPA	A
trans-1,2-Dichloroethene	0.38J	J	ug/L	1.0	0.26	SW846 8260C		4/29/15 08:31	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 08:31	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 08:31	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 08:31	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 08:31	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 08:31	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 08:31	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 08:31	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 08:31	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 08:31	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 08:31	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368002** Date Collected: 4/27/2015 09:50 Matrix: Water

Sample ID: **MRC-MW-113A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:31	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 08:31	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 08:31	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 08:31	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 08:31	JPA	A
Tetrachloroethene	45.7		ug/L	1.0	0.35	SW846 8260C			4/29/15 08:31	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/29/15 08:31	JPA	A
1,2,3-Trichlorobenzene	43.0		ug/L	2.0	0.93	SW846 8260C			4/29/15 08:31	JPA	A
1,2,4-Trichlorobenzene	131		ug/L	40.0	16.4	SW846 8260C			4/30/15 07:42	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 08:31	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:31	JPA	A
Trichloroethene	23.5		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:31	JPA	A
Trichlorofluoromethane	1010		ug/L	20.0	4.8	SW846 8260C			4/30/15 07:42	JPA	A
Vinyl Chloride	0.34J	J	ug/L	1.0	0.30	SW846 8260C			4/29/15 08:31	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:31	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 08:31	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	62 - 133		SW846 8260C			4/29/15 08:31	JPA	A
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/30/15 07:42	JPA	A
4-Bromofluorobenzene (S)	83.6		%	79 - 114		SW846 8260C			4/29/15 08:31	JPA	A
4-Bromofluorobenzene (S)	90.6		%	79 - 114		SW846 8260C			4/30/15 07:42	JPA	A
Dibromofluoromethane (S)	110		%	78 - 116		SW846 8260C			4/29/15 08:31	JPA	A
Dibromofluoromethane (S)	101		%	78 - 116		SW846 8260C			4/30/15 07:42	JPA	A
Toluene-d8 (S)	97.1		%	76 - 127		SW846 8260C			4/30/15 07:42	JPA	A
Toluene-d8 (S)	96.2		%	76 - 127		SW846 8260C			4/29/15 08:31	JPA	A
PCBs											
Decachlorobiphenyls	ND		ug/L	0.049	0.022	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Dichlorobiphenyls	ND		ug/L	0.0097	0.0039	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Heptachlorobiphenyls	ND		ug/L	0.029	0.011	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Hexachlorobiphenyls	ND		ug/L	0.019	0.0087	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Monochlorobiphenyls	ND		ug/L	0.0097	0.0029	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Nonachlorobiphenyls	ND		ug/L	0.039	0.019	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Octachlorobiphenyls	ND		ug/L	0.029	0.0097	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Pentachlorobiphenyls	ND		ug/L	0.019	0.0058	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Tetrachlorobiphenyls	ND		ug/L	0.019	0.0068	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Trichlorobiphenyls	ND		ug/L	0.0097	0.0039	EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368002** Date Collected: 4/27/2015 09:50 Matrix: Water

Sample ID: **MRC-MW-113A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
2-Fluorobiphenyl (S)	68.6		%	45 - 105		EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Terphenyl-d14 (S)	109		%	38 - 113		EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
Tetrachloro-m-xylene (S)	64.6		%	36 - 112		EPA 680	5/4/15	PDK	5/5/15 17:21	DHF	
SEMIVOLATILES											
1,4-Dioxane	5.4		ug/L	0.070	0.014	EPA 522	5/4/15	JEK	5/5/15 15:47	CGS	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.2		%	70 - 130		EPA 522	5/4/15	JEK	5/5/15 15:47	CGS	H
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/6/15 15:38	SUB	G

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368003** Date Collected: 4/27/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP03-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/29/15 08:48	JPA	A
Benzene	0.46J	J	ug/L	1.0	0.23	SW846 8260C		4/29/15 08:48	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:48	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/29/15 08:48	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/29/15 08:48	JPA	A
Bromomethane	0.59J	J	ug/L	1.0	0.39	SW846 8260C		4/29/15 08:48	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/29/15 08:48	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/29/15 08:48	JPA	A
Carbon Tetrachloride	0.86J	J	ug/L	1.0	0.31	SW846 8260C		4/29/15 08:48	JPA	A
Chlorobenzene	32.1		ug/L	1.0	0.19	SW846 8260C		4/29/15 08:48	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/29/15 08:48	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 08:48	JPA	A
Chloroform	0.97J	J	ug/L	1.0	0.21	SW846 8260C		4/29/15 08:48	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 08:48	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 08:48	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/29/15 08:48	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/29/15 08:48	JPA	A
1,2-Dichlorobenzene	13.5		ug/L	1.0	0.38	SW846 8260C		4/29/15 08:48	JPA	A
1,3-Dichlorobenzene	17.4		ug/L	1.0	0.25	SW846 8260C		4/29/15 08:48	JPA	A
1,4-Dichlorobenzene	37.5		ug/L	1.0	0.27	SW846 8260C		4/29/15 08:48	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/29/15 08:48	JPA	A
1,1-Dichloroethane	1.6		ug/L	1.0	0.28	SW846 8260C		4/29/15 08:48	JPA	A
1,2-Dichloroethane	1.1		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:48	JPA	A
1,1-Dichloroethene	0.30J	J	ug/L	1.0	0.29	SW846 8260C		4/29/15 08:48	JPA	A
cis-1,2-Dichloroethene	8.4		ug/L	1.0	0.32	SW846 8260C		4/29/15 08:48	JPA	A
trans-1,2-Dichloroethene	0.36J	J	ug/L	1.0	0.26	SW846 8260C		4/29/15 08:48	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/29/15 08:48	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/29/15 08:48	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/29/15 08:48	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/29/15 08:48	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/29/15 08:48	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/29/15 08:48	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/29/15 08:48	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/29/15 08:48	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/29/15 08:48	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/29/15 08:48	JPA	A

ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368003** Date Collected: 4/27/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP03-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:48	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/29/15 08:48	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/29/15 08:48	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/29/15 08:48	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/29/15 08:48	JPA	A
Tetrachloroethene	44.8		ug/L	1.0	0.35	SW846 8260C			4/29/15 08:48	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/29/15 08:48	JPA	A
1,2,3-Trichlorobenzene	43.3		ug/L	2.0	0.93	SW846 8260C			4/29/15 08:48	JPA	A
1,2,4-Trichlorobenzene	133		ug/L	40.0	16.4	SW846 8260C			4/30/15 07:59	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/29/15 08:48	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:48	JPA	A
Trichloroethene	22.1		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:48	JPA	A
Trichlorofluoromethane	961		ug/L	20.0	4.8	SW846 8260C			4/30/15 07:59	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/29/15 08:48	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/29/15 08:48	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/29/15 08:48	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133		SW846 8260C			4/30/15 07:59	JPA	A
1,2-Dichloroethane-d4 (S)	111		%	62 - 133		SW846 8260C			4/29/15 08:48	JPA	A
4-Bromofluorobenzene (S)	93.2		%	79 - 114		SW846 8260C			4/30/15 07:59	JPA	A
4-Bromofluorobenzene (S)	82.3		%	79 - 114		SW846 8260C			4/29/15 08:48	JPA	A
Dibromofluoromethane (S)	101		%	78 - 116		SW846 8260C			4/30/15 07:59	JPA	A
Dibromofluoromethane (S)	104		%	78 - 116		SW846 8260C			4/29/15 08:48	JPA	A
Toluene-d8 (S)	97.2		%	76 - 127		SW846 8260C			4/30/15 07:59	JPA	A
Toluene-d8 (S)	97.1		%	76 - 127		SW846 8260C			4/29/15 08:48	JPA	A
PCBs											
Decachlorobiphenyls	ND		ug/L	0.049	0.023	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Dichlorobiphenyls	ND		ug/L	0.0098	0.0039	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Heptachlorobiphenyls	ND		ug/L	0.029	0.011	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Hexachlorobiphenyls	ND		ug/L	0.020	0.0088	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Monochlorobiphenyls	0.011		ug/L	0.0098	0.0029	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Nonachlorobiphenyls	ND		ug/L	0.039	0.020	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Octachlorobiphenyls	ND		ug/L	0.029	0.0098	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Pentachlorobiphenyls	ND		ug/L	0.020	0.0059	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Tetrachlorobiphenyls	ND		ug/L	0.020	0.0069	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Trichlorobiphenyls	ND		ug/L	0.0098	0.0039	EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368003** Date Collected: 4/27/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP03-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
2-Fluorobiphenyl (S)	75		%	45 - 105		EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Terphenyl-d14 (S)	115	1	%	38 - 113		EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
Tetrachloro-m-xylene (S)	70.1		%	36 - 112		EPA 680	5/4/15	PDK	5/5/15 16:52	DHF	
SEMIVOLATILES											
1,4-Dioxane	5.6		ug/L	0.070	0.014	EPA 522	5/4/15	JEK	5/5/15 16:14	CGS	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81.8		%	70 - 130		EPA 522	5/4/15	JEK	5/5/15 16:14	CGS	H
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/6/15 16:35	SUB	G

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368004** Date Collected: 4/27/2015 11:29 Matrix: Water

Sample ID: **MRC-MW-105A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Barium, Total	0.085		mg/L	0.0056	0.0019	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Beryllium, Total	0.0031		mg/L	0.0010	0.00030	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Cadmium, Total	0.00043J	J	mg/L	0.0011	0.00037	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Cobalt, Total	0.034		mg/L	0.0056	0.0019	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Copper, Total	0.0085		mg/L	0.0056	0.0019	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Iron, Total	0.024J	J	mg/L	0.067	0.022	SW846 6010C	4/28/15	AAM	4/29/15 10:02	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Manganese, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/4/15	MNP	5/4/15 14:38	MNP	A4
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Nickel, Total	0.029		mg/L	0.0056	0.0019	SW846 6020A	4/29/15	AAM	4/29/15 13:09	MO	A3
Selenium, Total	0.0040J	J	mg/L	0.0056	0.0019	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/28/15	AAM	4/29/15 02:00	ZMC	A1

Debra J Musser

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368005** Date Collected: 4/27/2015 12:33 Matrix: Water

Sample ID: **MRC-MW-38A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 06:16	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 06:16	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 06:16	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 06:16	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 06:16	JPA	A
Bromomethane	0.50J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 06:16	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 06:16	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 06:16	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 06:16	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 06:16	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 06:16	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
Chloroform	9.9		ug/L	1.0	0.21	SW846 8260C		4/30/15 06:16	JPA	A
Chloromethane	0.31J	J	ug/L	1.0	0.31	SW846 8260C		4/30/15 06:16	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 06:16	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 06:16	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 06:16	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 06:16	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 06:16	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 06:16	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 06:16	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 06:16	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 06:16	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 06:16	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 06:16	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 06:16	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 06:16	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 06:16	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 06:16	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 06:16	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 06:16	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 06:16	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 06:16	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 06:16	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 06:16	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368005** Date Collected: 4/27/2015 12:33 Matrix: Water

Sample ID: **MRC-MW-38A-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/30/15 06:16	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 06:16	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 06:16	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 06:16	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/30/15 06:16	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 06:16	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/30/15 06:16	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/30/15 06:16	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 06:16	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 06:16	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 06:16	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 06:16	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/30/15 06:16	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	62 - 133	SW846 8260C		4/30/15 06:16	JPA	A
4-Bromofluorobenzene (S)	94.3		%	79 - 114	SW846 8260C		4/30/15 06:16	JPA	A
Dibromofluoromethane (S)	108		%	78 - 116	SW846 8260C		4/30/15 06:16	JPA	A
Toluene-d8 (S)	97.7		%	76 - 127	SW846 8260C		4/30/15 06:16	JPA	A

SUBCONTRACTED ANALYSIS

Subcontracted Analysis	See attached				Subcontract		5/6/15 16:54	SUB	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368006** Date Collected: 4/27/2015 14:33 Matrix: Water

Sample ID: **MRC-MW-38B-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 08:50	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 08:50	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 08:50	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 08:50	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 08:50	JPA	A
Bromomethane	0.55J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 08:50	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 08:50	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 08:50	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 08:50	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 08:50	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 08:50	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 08:50	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 08:50	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 08:50	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 08:50	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 08:50	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 08:50	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 08:50	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 08:50	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 08:50	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 08:50	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 08:50	JPA	A
cis-1,2-Dichloroethene	0.33J	J	ug/L	1.0	0.32	SW846 8260C		4/30/15 08:50	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 08:50	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 08:50	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 08:50	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 08:50	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 08:50	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 08:50	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 08:50	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 08:50	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 08:50	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 08:50	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 08:50	JPA	A

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067368 TMM024|112IC06247

Lab ID: **2067368006** Date Collected: 4/27/2015 14:33 Matrix: Water

Sample ID: **MRC-MW-38B-042715** Date Received: 4/27/2015 19:49

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/30/15 08:50	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 08:50	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 08:50	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 08:50	JPA	A
Tetrachloroethene	0.48J	J	ug/L	1.0	0.35	SW846 8260C		4/30/15 08:50	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 08:50	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/30/15 08:50	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/30/15 08:50	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 08:50	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
Trichloroethene	0.56J	J	ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 08:50	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 08:50	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 08:50	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/30/15 08:50	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260C		4/30/15 08:50	JPA	A
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260C		4/30/15 08:50	JPA	A
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260C		4/30/15 08:50	JPA	A
Toluene-d8 (S)	96.5		%	76 - 127	SW846 8260C		4/30/15 08:50	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2067368003	1	MRC-MW-DUP03-042715	EPA 680	Terphenyl-d14

The surrogate Terphenyl-d14 for method EPA 680 was outside of control limits. The % Recovery was reported as 115 and the control limits were 38 to 113. This result was reported at a dilution of 1.

ANALYTICAL REPORT

Workorder: 34-1511952
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: 2067368 002 | Sampling Site: NA | Collected: 04/27/2015
Lab ID: 1511952001 | Media: 250 mL Nalgene | Received: 04/29/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1565 (HBN: 148273) | **Percent Solid:** NA
Analyzed: 05/06/2015 15:38 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	0.17	0.060	0.20	1	J

Sample ID: 2067368 003 | Sampling Site: NA | Collected: 04/27/2015
Lab ID: 1511952002 | Media: 250 mL Nalgene | Received: 04/29/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1565 (HBN: 148273) | **Percent Solid:** NA
Analyzed: 05/06/2015 16:35 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	0.14	0.060	0.20	1	J

Sample ID: 2067368 005 | Sampling Site: NA | Collected: 04/27/2015
Lab ID: 1511952003 | Media: 250 mL Nalgene | Received: 04/29/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1565 (HBN: 148273) | **Percent Solid:** NA
Analyzed: 05/06/2015 16:54 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**1.1**	0.060	0.20	1	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/08/2015 15:05	/S/ Thomas T. McKay 05/11/2015 14:05

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-024

Sample Management

This report contains the results of the analysis of six (6) ground water samples collected on April 27, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 27, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Three (3) samples were subcontracted to ALS – Salt Lake City, Utah for the analysis of Perchlorate by 6850. The results have been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Two (2) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2170306, bromomethane was detected at 0.52J µg/L; carbon disulfide was detected at 0.38J µg/L; 1,4-dichlorobenzene was detected at 0.27J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Two (2) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

PCB Homolog Compounds

Sample Handling. Two (2) water samples were extracted by SW-846 Method 3546 and analyzed by Method 680 for PCB homolog compounds. The extraction and analysis were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes.

Initial Calibration Verification Check. Initial calibration verification standards (ICV) were properly analyzed and all results were within method criteria.

Continuing Calibration Verification. Continuing calibration standards were properly analyzed and met method criteria.

Blanks. Target analytes were not detected in the blank.

Surrogates. Recoveries were within control limits; except as follows:

- In sample MRC-MW-DUP03-042715 (2067368003), terphenyl-d14 was recovered above the control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. Internal standard results met method criteria.

Total Metals by SW-846 Method 6020A

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. One (1) water sample was analyzed for total mercury using EPA method 7470A. The sample was digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2067368004 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 5/20/2015

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1511952

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1565 (148273)

General Set Information: There were three field samples in this Work Order. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 445605) was less than 1/2 the CRDL. The recovery for the LCS (445606) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1511952001 (Client ID: 2067368 002). The percent recoveries and the relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 06MAYP-02/03/07/10/11/13.

Thomas Bosch — May11, 2015
Thomas Bosch — Date

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DUH

ALS Environmental
1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax)

PAGE 1

2067368

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-528-3000	Email: tony.apanavage@stratatech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Containe

PRESERVATIVE: 1 7 0 0 2

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP: VOCs (8260)	GC/MS SVOAs ○ 8270 ○ 625: 1,4-dioxane (8270)	PAHs ○ 8310: Perchlorate (6850)	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608: (680)	METALS, TOTAL (List in comments below): (6020A)	METALS, DISSOLVED (List in comments below)
1	TB-042715		4/27/15	—	Aq	3	X						
2	MRC-MW-113A-042715			0950		7	X	X	X		X		
3	MRC-MW-DUP03-042715			—		7	X	X	X		X		
4	MRC-MW-105A-042715			1129		4						X	
5	MRC-MW-39A-042715			1233		4	X		X				
6	MRC-MW-39B-042715			1433		3	X						

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

REMARKS/ ALTERNATE DESCRIPTION

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 5 °C
Cooler #:
Therm ID: 291
Ship Carrier: FedEx UPS DHL
Tracking #

SPECIAL INSTRUCTIONS/COMMENTS
Metals A SEE SCOPE FOR METALS LIST

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature						
Printed Name	Matt Pryor	Jerome Williams	Jerome Williams	Deandre Sabbatino	Deandre Sabbatino	Jessica Smith
Firm	TJ INC	ALS	ALS	ALS	ALS	ALS
Date/Time	4-27-15	4/27/15 1531	4/27/15	4/27/15 1650	4/27/15 1949	4/28/15 0919

Distribution: White - Lab Copy; Yellow - Return to Originator

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LMG 04/28/15 DUH

14348/#1

1511952

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Environmental • Industrial Hygiene • Field Services
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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 1511952 | 1 of 1
ALSI Quote #:

Client Name: ALS Global
Address: 34 Dogwood Lane
Middletown, PA 17057
Contact: Debra Musser
Phone#: 7179445541x3153
Project Name/#:
Bill To:

TAT ☐ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALSI approval and surcharges.
Date Required: _____ Approved By: _____
Email? [x] -Y Debra.Musser@alsglobal.com
Fax? ☐ -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)
								Enter Number of Containers Per Sample or Field Results Below.
2067368 002	4/27/15	0950	C	GW				X
2067368 003 (Dup)	4/27/15		C	GW				X
2067368 005	4/27/15	1233	C	GW				X

Receipt Information (completed by Receiving Lab)
Cooler Temp: _____ Cooler #: _____
Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?		
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____
Tracking #: _____

Sample/COC Comments
Subcontract: ALS Salt Lake City
Level IV Package Needed
TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time)
Reviewed By (initials/date/time)

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	4/28/15	1500	2	4/29/15	9:53
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐ Standard; [x] CLP-like; ☐ USACE; ☐
Special Processing: USACE ☐ Navy ☐ DOD ☐
State Samples Collected In: ☐ NY ☐ NJ ☐ PA ☐ NC ☐
Reportable to PADEP? Yes ☐ PWSID # _____
Sample Disposal: Lab ☐ Special ☐
EDDS: Format Type- ADR/SEDD

* G=Grab; C=Composite ** Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2067368 TMM024|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2067368001	TB-042715	Water	4/27/2015 00:00	4/27/2015 19:49	Collected by Client
2067368002	MRC-MW-113A-042715	Water	4/27/2015 09:50	4/27/2015 19:49	Collected by Client
2067368003	MRC-MW-DUP03-042715	Water	4/27/2015 00:00	4/27/2015 19:49	Collected by Client
2067368004	MRC-MW-105A-042715	Water	4/27/2015 11:29	4/27/2015 19:49	Collected by Client
2067368005	MRC-MW-38A-042715	Water	4/27/2015 12:33	4/27/2015 19:49	Collected by Client
2067368006	MRC-MW-38B-042715	Water	4/27/2015 14:33	4/27/2015 19:49	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-024

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170306(MB)	2170306	15042863.D	4/29/2015	03:05
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22
TB-042715	2067368001	15042869.D	4/29/2015	04:48
MRC-MW-113A-042715	2067368002	15042882.D	4/29/2015	08:31
MRC-MW-DUP03-042715	2067368003	15042883.D	4/29/2015	08:48

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-024

Lab File ID: 15043000.D BFB Injection Date: 4/30/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	81.0
175	5.0 - 9.0% of mass 174	5.8 (7.2) 1
176	95.0 - 101.0% of mass 174	79.5 (98.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15043002.D	4/30/2015	01:48
2170933(MB)	2170933	15043005.D	4/30/2015	02:50
2170934(LCS)	2170934	15043006.D	4/30/2015	03:08
MRC-MW-38A-042715	2067368005	15043017.D	4/30/2015	06:16
MRC-MW-113A-042715-DL20	2067368002	15043022.D	4/30/2015	07:42
MRC-MW-DUP03-042715-DL20	2067368003	15043023.D	4/30/2015	07:59
MRC-MW-38B-042715	2067368006	15043026.D	4/30/2015	08:50

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	4255	17230	69245	181093	373290	Q
Acrolein	0.06134	0.05818	0.05714	0.05526	0.05541	A
Acrylonitrile	0.11165	0.10975	0.10872	0.10615	0.10825	A
Acetonitrile	4601	23170	99080	243328	505090	Q
tert-Amyl Ethylether	8902	47537	243154	733910	1737572	Q
tert-Amyl methyl ether	11023	68104	331594	971037	2246772	Q
tert-Amyl Alcohol	1381	7641	35422	104691	248932	Q
Benzene	1.41199	1.41103	1.39276	1.39004	1.40862	A
Benzyl Chloride	775	4550	26568	100911	280755	Q
Bromobenzene	0.91268	0.94823	0.96053	0.99503	0.98967	A
Bromochloromethane	4340	22669	93150	247457	515557	Q
Bromodichloromethane	0.42588	0.40877	0.42375	0.43815	0.45809	A
Bromoform *	2735	17010	81526	251546	596234	Q
Bromomethane	4381	20304	88467	256107	548222	Q
2-Butanone	3204	17802	100686	273094	597667	Q
tert.- Butyl Alcohol	0.02863	0.02525	0.02411	0.02416	0.02543	A
tert-Butylbenzene	3074	24506	138639	441815	965379	Q
n-Butylbenzene	2959	22793	140515	462837	1023838	Q
sec-Butylbenzene	14852	125341	746667	2304396	5035297	Q
Carbon Disulfide	19463	98143	421588	1190636	2607744	Q
Carbon Tetrachloride	0.40178	0.42921	0.41516	0.42646	0.44356	A
Chloroacetonitrile	745	4261	22353	64985	150107	Q
Chlorobenzene *	2.40348	2.38443	2.19384	2.26528	2.29257	A
1-Chlorobutane	7695	40902	176498	483120	1016759	Q
Chlorodibromomethane	5745	32047	151849	447063	1018117	Q
Chloroethane	7076	35341	134325	352961	726899	Q
2-Chloroethylvinyl ether	178	1255	8329	32069	109535	Q
Chloroform **	26254	92262	347218	902125	1877847	Q
1-Chlorohexane	5049	32802	180386	576242	1324500	Q
Chloromethane *	12268	54126	202083	523832	1120226	Q
Chloroprene	0.50055	0.46086	0.45177	0.47932	0.49232	A
3-Chloro-1-propene	9266	49037	200391	533766	1080832	Q
o-Chlorotoluene	14041	105154	576135	1737210	3836681	Q
p-Chlorotoluene	11628	94669	532169	1629351	3563192	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.40622	0.41886	0.45509	0.47937	0.49007	A
1,2-Dibromo-3-Chloropropane	936	4966	24886	73470	174252	Q
1,2-Dibromoethane	0.68419	0.61462	0.59821	0.62575	0.66274	A
Dibromomethane	0.21845	0.20856	0.20642	0.20335	0.20589	A
trans-1,4-Dichloro-2-butene	0.23097	0.20423	0.23413	0.23057	0.23962	A
1,2-Dichlorobenzene	1.76747	1.71612	1.73101	1.80582	1.80880	A
1,3-Dichlorobenzene	1.75139	1.87266	1.81287	1.88231	1.87190	A
1,4-Dichlorobenzene	2.05143	1.98951	1.88911	1.92502	1.90981	A
Dichlorodifluoromethane	12409	60875	234675	599383	1254361	Q
1,1-Dichloroethane *	14805	79061	319285	849010	1777124	Q
1,2-Dichloroethene, Total	21213	112259	451055	1224977	2591425	Q
1,2-Dichloroethane	11165	58493	242705	629181	1328465	Q
1,1-Dichloroethene **	11996	60953	244803	636090	1333858	Q
cis-1,2-Dichloroethene	0.45637	0.46135	0.42904	0.43981	0.45378	A
trans-1,2-Dichloroethene	11440	58891	231367	615454	1269464	Q
Dichlorofluoromethane	17071	88086	342937	895322	1856859	Q
1,1-Dichloro-2-Propanone	414	2714	14122	45079	100723	Q
2,2-Dichloropropane	0.37890	0.37353	0.35312	0.37484	0.39876	A
1,3-Dichloropropane	10307	57614	261990	731359	1600976	Q
1,2-Dichloropropane **	0.33412	0.34028	0.34402	0.34728	0.35511	A
1,1-Dichloropropene	0.40557	0.42815	0.44749	0.46578	0.47468	A
cis-1,3-Dichloropropene	6897	40887	214986	677067	1574649	Q
trans-1,3-Dichloropropene	5457	37603	211290	636980	1452634	Q
1,3-Dichloropropene, Total	12354	78490	426276	1314047	3027283	Q
Diisobutylene	34089	98471	366547	1028091	2188154	Q
Diisopropyl ether	23388	118429	473219	1316882	2842898	Q
1,4-Dioxane	1268	7271	39659	123213	274830	Q
Ethyl Acetate	0.25291	0.24232	0.25189	0.26267	0.27556	A
Ethyl ether	5122	25907	108421	288591	616986	Q
Ethyl Methacrylate	4623	30083	171068	549342	1287967	Q
Ethyl tert-butyl ether	0.77830	0.77171	0.77268	0.83007	0.88191	A
Ethylbenzene **	7638	50660	258658	738205	1595442	Q
Freon 113	7783	42237	162759	422787	868099	Q
Heptane	2843	19956	96976	294440	636399	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	3692	18782	85225	256816	546919	Q
Hexachloroethane	3247	20135	102383	317949	733297	Q
Hexane	14618	70724	279913	770956	1585731	Q
2-Hexanone	12071	75356	468071	1403573	3083914	Q
Iodomethane	377	1608	9504	60808	242612	Q
Isobutyl alcohol	2230	7901	36859	105220	245799	Q
Isopropyl Alcohol	2771	10229	41220	116341	251135	Q
Isopropylbenzene	15259	114086	668565	2139375	4812946	Q
p-Isopropyltoluene	2630	24420	159185	513113	1139653	Q
Methyl acetate	1654	7185	28971	72637	154489	Q
Methyl acrylate	0.23153	0.22724	0.24813	0.25893	0.27587	A
Methacrylonitrile	2535	14069	71612	185960	403107	Q
Methyl cyclohexane	1.06925	1.01726	1.04178	1.14275	1.17553	A
Methyl methacrylate	3497	17459	95253	302308	724319	Q
Methyl t-Butyl Ether	0.88912	0.82344	0.77866	0.77468	0.80454	A
4-Methyl-2-Pentanone(MIBK)	18381	120573	692265	2032522	4399659	Q
Methylene Chloride	17731	57732	205297	505211	1028327	Q
Naphthalene	7249	43933	303542	1242934	3038814	Q
Nitrobenzene	1922	9192	48178	174141	540453	Q
2-Nitropropane	4765	27822	152005	473592	1074012	Q
Octane	1440	11465	71102	241793	529959	Q
Pentachloroethane	0.69244	0.72287	0.67152	0.69239	0.68967	A
Pentane	6458	30565	117601	307218	617690	Q
n-Propanol	6904	32213	132136	330916	662618	Q
Propionitrile	0.04555	0.04383	0.04356	0.04302	0.04363	A
n-Propylbenzene	4066	32776	202726	619070	1357867	Q
Styrene	10182	73126	466501	1452823	3245469	Q
1,1,1,2-Tetrachloroethane	0.79859	0.76397	0.71145	0.75061	0.77985	A
1,1,2,2-Tetrachloroethane *	8018	47061	203453	551573	1155884	Q
Tetrachloroethene	6696	38022	161358	430317	898819	Q
Tetrahydrofuran	6900	40707	195770	555106	1236148	Q
Toluene **	12123	80663	417580	1193078	2596468	Q
Total Xylenes	21165	156136	858624	2641701	5823518	Q
1,2,3-Trichlorobenzene	4989	29884	175129	568713	1270386	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	5598	32091	182495	625386	1451597	Q
1,1,1-Trichloroethane	0.51091	0.51580	0.49223	0.50227	0.50693	A
1,1,2-Trichloroethane	5797	33055	135958	365959	778240	Q
Trichloroethene	8753	44453	181459	494092	1046268	Q
Trichlorofluoromethane	16411	80251	310915	800728	1652122	Q
1,2,3-Trichloropropane	2155	14137	63818	171594	364322	Q
1,2,4-Trimethylbenzene	10991	96573	625043	1920098	4196140	Q
1,3,5-Trimethylbenzene	10816	96617	624885	1889506	4084862	Q
Vinyl Acetate	957	6167	32201	92858	207276	Q
Vinyl Chloride **	10022	49709	199682	549983	1172233	Q
o-Xylene	6366	44920	247884	832611	1889306	Q
mp-Xylene	14799	111216	610740	1809090	3934212	Q
4-Bromofluorobenzene	5623	30742	149439	455076	1015672	Q
Dibromofluoromethane	10369	43325	159829	423424	891026	Q
1,2-Dichloroethane-d4	14862	51198	189761	477803	982788	Q
Toluene-d8	2.85249	2.22859	2.19395	2.37576	2.44519	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.2	100.0	Q
Acrolein	0.0581	0.0524			-9.9	100.0	A
Acrylonitrile	0.1086	0.1034			-4.8	100.0	A
Acetonitrile	250		247		-1.1	100.0	Q
tert-Amyl Ethylether	50.0000		43.2377		-13.5	100.0	Q
tert-Amyl methyl ether	50.0000		43.0118		-14.0	100.0	Q
tert-Amyl Alcohol	250		207		-17.3	100.0	Q
Benzene	1.4258	1.3455			-5.6	100.0	A
Benzyl Chloride	50.0000		38.9773		-22.0	100.0	Q
Bromobenzene	0.9609	0.9127			-5.0	100.0	A
Bromochloromethane	50.0000		48.8843		-2.2	100.0	Q
Bromodichloromethane	0.4399	0.4168			-5.3	100.0	A
Bromoform	50.0000		41.9449	0.100	-16.1	100.0	Q
Bromomethane	50.0000		59.3716		18.7	100.0	Q
2-Butanone	250		195		-22.0	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0221			-13.3	100.0	A
tert-Butylbenzene	50.0000		45.1641		-9.7	100.0	Q
n-Butylbenzene	50.0000		44.1110		-11.8	100.0	Q
sec-Butylbenzene	50.0000		45.2798		-9.4	100.0	Q
Carbon Disulfide	50.0000		46.4227		-7.2	100.0	Q
Carbon Tetrachloride	0.4297	0.4103			-4.5	100.0	A
Chloroacetonitrile	250		212		-15.1	100.0	Q
Chlorobenzene	2.3877	2.0948		0.300	-12.3	100.0	A
1-Chlorobutane	50.0000		47.2735		-5.5	100.0	Q
Chlorodibromomethane	50.0000		43.8207		-12.4	100.0	Q
Chloroethane	50.0000		50.8149		1.6	100.0	Q
2-Chloroethylvinyl ether	50.0000		36.5947		-26.8	100.0	Q
Chloroform	50.0000		49.5065		-1.0	20.0	Q
1-Chlorohexane	50.0000		43.5800		-12.8	100.0	Q
Chloromethane	50.0000		54.8450	0.100	9.7	100.0	Q
Chloroprene	0.4876	0.4827			-1.0	100.0	A
3-Chloro-1-propene	50.0000		45.8975		-8.2	100.0	Q
o-Chlorotoluene	50.0000		45.5015		-9.0	100.0	Q
p-Chlorotoluene	50.0000		45.2425		-9.5	100.0	Q
Cyclohexane	0.4544	0.4665			2.7	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.5241		-17.0	100.0	Q
1,2-Dibromoethane	0.6562	0.5552			-15.4	100.0	A
Dibromomethane	0.2114	0.1903			-10.0	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.1969			-13.7	100.0	A
1,2-Dichlorobenzene	1.7893	1.6318			-8.8	100.0	A
1,3-Dichlorobenzene	1.8566	1.7159			-7.6	100.0	A
1,4-Dichlorobenzene	1.9931	1.7805			-10.7	100.0	A
Dichlorodifluoromethane	50.0000		52.9865		6.0	100.0	Q
1,1-Dichloroethane	50.0000		50.7649	0.100	1.5	100.0	Q
1,2-Dichloroethene, Total	100		96.7581		-3.2	100.0	Q
1,2-Dichloroethane	50.0000		47.6995		-4.6	100.0	Q
1,1-Dichloroethene	50.0000		48.6981		-2.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.4385			-5.5	100.0	A
trans-1,2-Dichloroethene	50.0000		49.5179		-1.0	100.0	Q
Dichlorofluoromethane	50.0000		48.7129		-2.6	100.0	Q
1,1-Dichloro-2-Propanone	250		214		-14.2	100.0	Q
2,2-Dichloropropane	0.3930	0.3391			-13.7	100.0	A
1,3-Dichloropropane	50.0000		44.5618		-10.9	100.0	Q
1,2-Dichloropropane	0.3530	0.3317			-6.0	20.0	A
1,1-Dichloropropene	0.4527	0.4426			-2.2	100.0	A
cis-1,3-Dichloropropene	50.0000		42.8517		-14.3	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.3453		-13.3	100.0	Q
1,3-Dichloropropene, Total	100		86.1970		-13.8	100.0	Q
Diisobutylene	50.0000		45.7096		-8.6	100.0	Q
Diisopropyl ether	50.0000		48.8422		-2.3	100.0	Q
1,4-Dioxane	1250		1047		-16.3	100.0	Q
Ethyl Acetate	0.2675	0.2401			-10.2	100.0	A
Ethyl ether	50.0000		46.3510		-7.3	100.0	Q
Ethyl Methacrylate	50.0000		41.4696		-17.1	100.0	Q
Ethyl tert-butyl ether	0.8344	0.7905			-5.3	100.0	A
Ethylbenzene	50.0000		45.7960		-8.4	20.0	Q
Freon 113	50.0000		47.7930		-4.4	100.0	Q
Heptane	50.0000		41.9493		-16.1	100.0	Q
Hexachlorobutadiene	50.0000		43.6456		-12.7	100.0	Q
Hexachloroethane	50.0000		44.2898		-11.4	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		46.3563		-7.3	100.0	Q
2-Hexanone	250		210		-16.1	100.0	Q
Iodomethane	50.0000		64.6925		29.4	100.0	Q
Isobutyl alcohol	500		416		-16.8	100.0	Q
Isopropyl Alcohol	250		227		-9.3	100.0	Q
Isopropylbenzene	50.0000		44.5488		-10.9	100.0	Q
p-Isopropyltoluene	50.0000		44.3574		-11.3	100.0	Q
Methyl acetate	50.0000		47.9380		-4.1	100.0	Q
Methyl acrylate	0.2529	0.2324			-8.1	100.0	A
Methacrylonitrile	50.0000		46.5053		-7.0	100.0	Q
Methyl cyclohexane	1.1020	1.0155			-7.8	100.0	A
Methyl methacrylate	50.0000		42.5022		-15.0	100.0	Q
Methyl t-Butyl Ether	0.8449	0.7340			-13.1	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		214		-14.3	100.0	Q
Methylene Chloride	50.0000		50.9288		1.9	100.0	Q
Naphthalene	50.0000		38.4048		-23.2	100.0	Q
Nitrobenzene	500		372		-25.7	100.0	Q
2-Nitropropane	250		225		-10.0	100.0	Q
Octane	50.0000		39.9334		-20.1	100.0	Q
Pentachloroethane	0.6997	0.6337			-9.4	100.0	A
Pentane	50.0000		45.4640		-9.1	100.0	Q
n-Propanol	500		515		3.1	100.0	Q
Propionitrile	0.0436	0.0401			-8.0	100.0	A
n-Propylbenzene	50.0000		45.6385		-8.7	100.0	Q
Styrene	50.0000		45.0324		-9.9	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6929			-14.0	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.2088	0.300	-11.6	100.0	Q
Tetrachloroethene	50.0000		46.5844		-6.8	100.0	Q
Tetrahydrofuran	250		219		-12.2	100.0	Q
Toluene	50.0000		45.2579		-9.5	20.0	Q
Total Xylenes	150		134		-10.9	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.5426		-16.9	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.4271		-19.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4758			-7.7	100.0	A
1,1,2-Trichloroethane	50.0000		45.5646		-8.9	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-024

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		47.0150		-6.0	100.0	Q
Trichlorofluoromethane	50.0000		50.1777		0.4	100.0	Q
1,2,3-Trichloropropane	50.0000		44.2524		-11.5	100.0	Q
1,2,4-Trimethylbenzene	50.0000		45.2673		-9.5	100.0	Q
1,3,5-Trimethylbenzene	50.0000		45.7632		-8.5	100.0	Q
Vinyl Acetate	50.0000		46.1661		-7.7	100.0	Q
Vinyl Chloride	50.0000		49.0546		-1.9	20.0	Q
o-Xylene	50.0000		42.7290		-14.5	100.0	L
mp-Xylene	100		90.9349		-9.1	100.0	Q
4-Bromofluorobenzene	50.0000		47.6456		-4.7	100.0	Q
Dibromofluoromethane	50.0000		49.2453		-1.5	100.0	Q
1,2-Dichloroethane-d4	50.0000		48.2810		-3.4	100.0	Q
Toluene-d8	2.4192	2.2464			-7.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170306

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-024

Lab File ID: 15042863.D Lab Sample ID: 2170306

Date Analyzed: 4/29/2015 Time Analyzed: 03:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170307(LCS)	2170307	15042864.D	03:22
TB-042715	2067368001	15042869.D	04:48
MRC-MW-113A-042715	2067368002	15042882.D	08:31
MRC-MW-DUP03-042715	2067368003	15042883.D	08:48

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.52	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.38	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.27	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170306(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Matrix (soil/water): WATER Lab Sample ID: 2170306

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15042863.D

Level (low/med): Date Received: 4/28/15

% Moisture: not dec. 100.0 Date Analyzed: 4/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170933

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-024

Lab File ID: 15043005.D Lab Sample ID: 2170933

Date Analyzed: 4/30/2015 Time Analyzed: 02:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170934(LCS)	2170934	15043006.D	03:08
MRC-MW-38A-042715	2067368005	15043017.D	06:16
MRC-MW-113A-042715-DL	2067368002	15043022.D	07:42
MRC-MW-DUP03-042715-D	2067368003	15043023.D	07:59
MRC-MW-38B-042715	2067368006	15043026.D	08:50

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-024

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2170306(MB)	97.6	98.9	102	101	0
02	2170307(LCS)	96.5	94.4	94.2	91.3	0
03	TB-042715	97.7	106	112	101	0
04	MRC-MW-113A-042715	83.6	110	114	96.2	0
05	MRC-MW-DUP03-042715	82.3	104	111	97.1	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-024

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
06	2170933(MB)	89.5	101	106	97.2	0
07	2170934(LCS)	90.2	93.0	94.1	87.5	0
08	MRC-MW-38A-042715	94.3	108	114	97.7	0
09	MRC-MW-113A-042715-DL20	90.6	101	108	97.1	0
10	MRC-MW-DUP03-042715-DL20	93.2	101	108	97.2	0
11	MRC-MW-38B-042715	92.5	103	110	96.5	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.9	99.9	(40-151)
Benzene	20.0		19.2	96.2	(80-124)
Bromochloromethane	20.0		19.1	95.7	(73-117)
Bromodichloromethane	20.0		18.4	92	(79-126)
Bromoform	20.0		16.1	80.6	(70-123)
Bromomethane	20.0		23.0	115	(45-148)
2-Butanone	100		88.2	88.2	(50-152)
Carbon Disulfide	20.0		16.2	81.1	(57-131)
Carbon Tetrachloride	20.0		18.9	94.3	(62-132)
Chlorobenzene	20.0		18.1	90.4	(85-117)
Chlorodibromomethane	20.0		17.1	85.6	(77-122)
Chloroethane	20.0		18.8	94.2	(51-142)
Chloroform	20.0		19.9	99.7	(78-122)
Chloromethane	20.0		23.4	117	(38-156)
Cyclohexane	20.0		19.9	99.3	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.2	81.2	(59-133)
1,2-Dibromoethane	20.0		17.4	87.1	(80-124)
1,2-Dichlorobenzene	20.0		18.1	90.5	(82-118)
1,3-Dichlorobenzene	20.0		19.0	95	(81-118)
1,4-Dichlorobenzene	20.0		18.6	92.9	(81-116)
Dichlorodifluoromethane	20.0		20.0	99.9	(17-166)
1,1-Dichloroethane	20.0		19.8	99	(78-124)
1,2-Dichloroethane	20.0		19.8	99.1	(70-133)
1,1-Dichloroethene	20.0		18.8	94.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.3	91.5	(78-125)
trans-1,2-Dichloroethen	20.0		20.6	103	(71-122)
1,2-Dichloropropane	20.0		18.8	94	(81-127)
cis-1,3-Dichloropropene	20.0		16.6	83.1	(81-121)
trans-1,3-Dichloroprope	20.0		17.1	85.7	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		390	78	(1-280)
Ethylbenzene	20.0		17.8	89.2	(80-124)
Freon 113	20.0		19.5	97.5	(50-130)
2-Hexanone	100		79.9	79.9	(65-154)
Isopropylbenzene	20.0		16.1	80.4	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.2	90.9	(70-130)
Methyl t-Butyl Ether	20.0		17.5	87.7	(69-115)
4-Methyl-2-Pentanone(MI	100		81.9	81.9	(71-146)
Methylene Chloride	20.0		20.6	103	(76-121)
Styrene	20.0		17.0	85	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.9	94.5	(74-135)
Tetrachloroethene	20.0		19.3	96.3	(72-124)
Toluene	20.0		18.3	91.4	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.9	69.5	(67-123)
1,1,1-Trichloroethane	20.0		18.9	94.3	(66-130)
1,1,2-Trichloroethane	20.0		19.1	95.7	(82-126)
Trichloroethene	20.0		19.3	96.7	(77-124)
Trichlorofluoromethane	20.0		19.4	96.8	(38-123)
Vinyl Chloride	20.0		19.0	94.8	(27-138)
o-Xylene	20.0		16.1	80.4	(79-124)
mp-Xylene	40.0		34.7	86.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170306(MB)	281749	5.912	230024	7.686	712696	3.910
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910
TB-042715	248251	5.912	194161	7.686	626939	3.910
MRC-MW-113A-04271	256972	5.912	237824	7.686	597208	3.910
MRC-MW-DUP03-0427	267441	5.912	248514	7.686	637242	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-024

Lab File ID: 15043002.D Date Analyzed: 4/30/2015

Instrument ID: ms15.i Time Analyzed: 01:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	377428	5.913	347722	7.686	793589	3.910
UPPER LIMIT	754856	6.413	695444	8.186	1587178	4.410
LOWER LIMIT	188714	5.413	173861	7.186	396795	3.410
SAMPLE NO.						
1800	377428	5.913	347722	7.686	793589	3.910
2170933(MB)	241882	5.913	192305	7.686	624719	3.910
2170934(LCS)	356190	5.913	320195	7.686	761046	3.910
MRC-MW-38A-042715	228944	5.913	175158	7.686	571291	3.910
MRC-MW-113A-04271	255985	5.913	208092	7.686	636910	3.910
MRC-MW-DUP03-0427	254683	5.913	200075	7.686	645632	3.910
MRC-MW-38B-042715	242016	5.913	187357	7.686	604888	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

1,4-Dioxane by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/05/15	0921	8.38			
02	2172660	2172660	05/05/15	0946	8.38			
03	2172661LCSLO	2172661	05/05/15	1013	8.36			
04	MIDCHECK-5	MIDCHECK-5	05/05/15	1522	8.38			
05	MRC-MW-113A-	2067368002	05/05/15	1547	8.36			
06	MRC-MW-DUP03	2067368003	05/05/15	1614	8.36			
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1000	1000	08/13/14	1534		
02	1234	1234	08/13/14	1643	8.38	
03	1235	1235	08/13/14	1713	8.36	
04	1236	1236	08/13/14	1742	8.38	
05	1237	1237	08/13/14	1814	8.38	
06	1238	1238	08/13/14	1845	8.38	
07	1239	1239	08/13/14	1918	8.38	
08	1240	1240	08/13/14	1950	8.38	
09	1241	1241	08/13/14	2018	8.36	
10	1242	1242	08/13/14	2046	8.38	
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
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30						
31						
32						

QC LIMITS

S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 0921

Lab File ID: 12050501 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.28e-003	3.5e-003	1.3620085	0.00001	-6.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6280914	0.6280914	0.00001	-11.78	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 1522

Lab File ID: 12050515 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.63e-002	5.e-002	1.3774356	0.00001	-7.40	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6411731	0.6411731	0.00001	-9.95	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 12050502 Lab Sample ID: 2172660

Instrument ID: MS12 Date Extracted: 05/04/15

Matrix: (soil/water) WATER Date Analyzed: 05/05/15

Level:(low/med) LOW Time Analyzed: 0946

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172661LCSLO	2172661	12050503	05/05/15
02	MRC-MW-113A-	2067368002	12050516	05/05/15
03	MRC-MW-DUP03	2067368003	12050517	05/05/15
04				
05				
06				
07				
08				
09				
10				
11				
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COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix: (soil/water) WATER Lab Sample ID: 2172660

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050502

Level: (low/med) LOW Date Received: 05/04/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/04/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/05/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172660	81								0
02	2172661LCSLO	83								0
03	MRC-MW-113A-	82								0
04	MRC-MW-DUP03	82								0
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
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28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix Spike - Sample No.: 2172661LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0666911	95	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050501 Time Analyzed: 0921

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	45530	6.36				
	UPPER LIMIT	59189	6.86				
	LOWER LIMIT	31871	5.86				
	SAMPLE NO.						
01	2172660	51731	6.36				
02	2172661LCSLO	51274	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050515 Time Analyzed: 1522

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49202	6.36				
	UPPER LIMIT	63963	6.86				
	LOWER LIMIT	34441	5.86				
	SAMPLE NO.						
01	MRC-MW-113A-	49977	6.36				
02	MRC-MW-DUP03	51416	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

PCBs by 680 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 7.70 TCX: 10.48

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	TCX RT #
01	DFTPP	DFTPP	04/08/15	1849		
02	680-0.1	680-0.1	04/08/15	2053	7.70	10.48
03	680-0.2	680-0.2	04/08/15	2123	7.70	10.48
04	680-0.5	680-0.5	04/08/15	2152	7.70	10.48
05	680-1	680-1	04/08/15	2222	7.70	10.48
06	680-1.5	680-1.5	04/08/15	2252	7.70	10.48
07	680-2A	680-2A	04/08/15	2321	7.70	10.48
08	680-3	680-3	04/08/15	2351	7.70	10.48
09	680-4	680-4	04/09/15	0020	7.70	10.48
10	680-5	680-5	04/09/15	0050	7.70	10.48
11	680-2ND-PCB	680-2ND-PCB	04/09/15	0120		
12	680-2ND-SUR	680-2ND-SUR	04/09/15	0149	7.70	10.48
13						
14						
15						
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QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.02 MINUTES)
TCX = Tetrachloro-m-xylene (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 16.06

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT	#	RT	#
01	680-0.1	680-0.1	04/08/15	2053	16.06			
02	680-0.2	680-0.2	04/08/15	2123	16.06			
03	680-0.5	680-0.5	04/08/15	2152	16.06			
04	680-1	680-1	04/08/15	2222	16.06			
05	680-1.5	680-1.5	04/08/15	2252	16.06			
06	680-2A	680-2A	04/08/15	2321	16.06			
07	680-3	680-3	04/08/15	2351	16.06			
08	680-4	680-4	04/09/15	0020	16.06			
09	680-5	680-5	04/09/15	0050	16.08			
10	ZZZZZ	ZZZZZ	04/09/15	0120				
11	ZZZZZ	ZZZZZ	04/09/15	0149	16.06			
12								
13								
14								
15								
16								
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22								
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27								
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29								
30								
31								
32								

QC LIMITS
S3 = Terphenyl-d14 (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 7.70 TCX: 10.48

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	TCX RT #
01	DFTPP	DFTPP	05/05/15	1850		
02	1800	1800	05/05/15	1949	7.70	10.48
03	2172725	2172725	05/05/15	2048	7.70	10.48
04						
05						
06						
07						
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30						
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32						

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.02 MINUTES)
TCX = Tetrachloro-m-xylene (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 16.08

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT	#	RT	#
01	1800	1800	05/05/15	1949	16.08			
02	2172725	2172725	05/05/15	2048	16.08			
03								
04								
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32								

QC LIMITS
S3 = Terphenyl-d14 (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 7.71 TCX: 10.49

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	TCX RT #
01	DFTPP	DFTPP	05/05/15	1345		
02	1800	1800	05/05/15	1415	7.71	10.49
03	2172726LCS	2172726	05/05/15	1553	7.70	10.48
04	MRC-MW-DUP03	2067368003	05/05/15	1652	7.70	10.48
05	MRC-MW-113A-	2067368002	05/05/15	1721	7.70	10.48
06						
07						
08						
09						
10						
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12						
13						
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27						
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29						
30						
31						
32						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.02 MINUTES)
TCX = Tetrachloro-m-xylene (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

GC Column: ZB-5 ID: 0.25(mm) Init. Calib. Date(s): 04/08/15 04/09/15

Instrument ID: MS06

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION S3 : 16.08					
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01 1800	1800	05/05/15	1415	16.08	
02 2172726LCS	2172726	05/05/15	1553	16.08	
03 MRC-MW-DUP03	2067368003	05/05/15	1652	16.08	
04 MRC-MW-113A-	2067368002	05/05/15	1721	16.08	
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
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24					
25					
26					
27					
28					
29					
30					
31					
32					

QC LIMITS
S3 = Terphenyl-d14 (+/- 0.02 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 6040801 DFTPP Injection Date: 04/08/15

Instrument ID: MS06 DFTPP Injection Time: 1849

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	Less than 150.0% of mass 198	22.1
68	Less than 100.0% of mass 69	0.5 (1.7)1
69	Mass 69 relative abundance	26.6
70	Less than 100.0% of mass 69	0.1 (0.4)1
127	40.0 - 60.0% of mass 198	46.1
197	Less than 1.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	26.1
365	Greater than 1.0% of mass 198	2.86
441	0.0 - 100.0% of mass 443	10.4 (89.4)2
442	40.0 - 150.0% of mass 198	60.8
443	17.0 - 23.0% of mass 442	11.6 (19.1)3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	680-0.1	680-0.1	6040804	04/08/15	2053
02	680-0.2	680-0.2	6040805	04/08/15	2123
03	680-0.5	680-0.5	6040806	04/08/15	2152
04	680-1	680-1	6040807	04/08/15	2222
05	680-1.5	680-1.5	6040808	04/08/15	2252
06	680-2A	680-2A	6040809	04/08/15	2321
07	680-3	680-3	6040810	04/08/15	2351
08	680-4	680-4	6040811	04/09/15	0020
09	680-5	680-5	6040812	04/09/15	0050
10	680-PCB-2ND	680-PCB-2ND	6040813	04/09/15	0120
11	680-SUR-2ND	680-SUR-2ND	6040814	04/09/15	0149
12					
13					
14					
15					
16					
17					
18					
19					
20					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 6050501 DFTPP Injection Date: 05/05/15

Instrument ID: MS06 DFTPP Injection Time: 1345

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	Less than 150.0% of mass 198	22.0
68	Less than 100.0% of mass 69	0.3 (1.1)1
69	Mass 69 relative abundance	26.4
70	Less than 100.0% of mass 69	0.1 (0.2)1
127	40.0 - 60.0% of mass 198	45.0
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	27.1
365	Greater than 1.0% of mass 198	2.73
441	0.0 - 100.0% of mass 443	11.2 (88.3)2
442	40.0 - 150.0% of mass 198	63.7
443	17.0 - 23.0% of mass 442	12.7 (19.9)3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1800	1800	6050502	05/05/15	1415
02	2172726LCS	2172726	6050505	05/05/15	1553
03	MRC-MW-DUP03	2067368003	6050507	05/05/15	1652
04	MRC-MW-113A-	2067368002	6050508	05/05/15	1721
05					
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FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 6050509 DFTPP Injection Date: 05/05/15

Instrument ID: MS06 DFTPP Injection Time: 1751

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	Less than 150.0% of mass 198	21.8
68	Less than 100.0% of mass 69	0.2 (0.9)1
69	Mass 69 relative abundance	25.3
70	Less than 100.0% of mass 69	0.1 (0.5)1
127	40.0 - 60.0% of mass 198	45.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	26.3
365	Greater than 1.0% of mass 198	3.01
441	0.0 - 100.0% of mass 443	12.0 (94.5)2
442	40.0 - 150.0% of mass 198	65.7
443	17.0 - 23.0% of mass 442	12.8 (19.4)3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1800	1800	6050513	05/05/15	1949
02	2172725	2172725	6050515	05/05/15	2048
03					
04					
05					
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17					
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19					
20					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS06 Calibration Date(s): 04/08/15 04/09/15

Column: ZB-5 ID: 0.25 (mm) Calibration Time(s): 2053 0050

LAB FILE ID: RF0.02: 6040804 RF0.04: 6040805 RF0.1: 6040806
RF0.2: 6040807 RF0.5: 6040808 RF1: 6040809

COMPOUND	RF0.02	RF0.04	RF0.1	RF0.2	RF0.5	RF1
Monochlorobiphenyls	0.781	0.796	0.808	0.801	0.820	0.830
CL1-1Q	0.781	0.796	0.808	0.801	0.820	0.830
Dichlorobiphenyls	0.632	0.629	0.596	0.609	0.616	0.636
CL2-Q	0.632	0.629	0.596	0.609	0.616	0.636
2,2,4,6,6-Pentachlorobipheny	0.279	0.269	0.281	0.278	0.282	0.281
Trichlorobiphenyls	0.397	0.421	0.409	0.421	0.429	0.430
CL3-Q	0.397	0.421	0.409	0.421	0.429	0.430
Tetrachlorobiphenyls	0.260	0.243	0.248	0.252	0.255	0.260
CL4-Q	0.260	0.243	0.248	0.252	0.255	0.260
Pentachlorobiphenyls	0.187	0.197	0.197	0.196	0.201	0.203
CL5-Q	0.187	0.197	0.197	0.196	0.201	0.203
Hexachlorobiphenyls	0.153	0.161	0.163	0.165	0.170	0.173
CL6-Q	0.153	0.161	0.163	0.165	0.170	0.173
Heptachlorobiphenyls	0.136	0.133	0.138	0.138	0.142	0.145
CL7-1Q	0.136	0.133	0.138	0.138	0.142	0.145
Octachlorobiphenyls	0.103	0.101	0.097	0.098	0.099	0.102
CL8-Q	0.103	0.101	0.097	0.098	0.099	0.102
Nonachlorobiphenyls	0.075	0.074	0.076	0.075	0.078	0.080
CL9-1Q	0.075	0.074	0.076	0.075	0.078	0.080
Decachlorobiphenyl	0.065	0.064	0.063	0.065	0.067	0.068
3,3,4,4-Tetrachlorobiphenyl_	0.447	0.448	0.453	0.455	0.484	0.484
2-Fluorobiphenyl	1.072	1.022	1.057	1.045	1.077	1.091
Tetrachloro-m-xylene	0.256	0.253	0.240	0.245	0.248	0.254
Terphenyl-d14	0.930	0.918	0.924	0.941	0.998	0.996

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS06 Calibration Date(s): 04/08/15 04/09/15

Column: ZB-5 ID: 0.25 (mm) Calibration Time(s): 2053 0050

LAB FILE ID: RF2: 6040810 RF4: 6040811 RF10: 6040812

COMPOUND	RF2	RF4	RF10	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
Monochlorobiphenyls	0.831	0.809	0.827	AVRG	0.81147720	2.110	20.000
CL1-1Q	0.831	0.809	0.827	AVRG	0.81147720	2.110	20.000
Dichlorobiphenyls	0.626	0.624	0.636	AVRG	0.62280052	2.180	20.000
CL2-Q	0.626	0.624	0.636	AVRG	0.62280052	2.180	20.000
2,2,4,6,6-Pentachlorobipheny	0.282	0.280	0.282	AVRG	0.27941149	1.500	20.000
Trichlorobiphenyls	0.438	0.432	0.440	AVRG	0.42426763	3.249	20.000
CL3-Q	0.438	0.432	0.440	AVRG	0.42426763	3.249	20.000
Tetrachlorobiphenyls	0.259	0.259	0.258	AVRG	0.25482942	2.352	20.000
CL4-Q	0.259	0.259	0.258	AVRG	0.25482942	2.352	20.000
Pentachlorobiphenyls	0.203	0.205	0.208	AVRG	0.19969348	3.025	20.000
CL5-Q	0.203	0.205	0.208	AVRG	0.19969348	3.025	20.000
Hexachlorobiphenyls	0.169	0.168	0.168	AVRG	0.16543138	3.519	20.000
CL6-Q	0.169	0.168	0.168	AVRG	0.16543138	3.519	20.000
Heptachlorobiphenyls	0.144	0.145	0.146	AVRG	0.14062430	3.302	20.000
CL7-1Q	0.144	0.145	0.146	AVRG	0.14062430	3.302	20.000
Octachlorobiphenyls	0.100	0.102	0.103	AVRG	0.10061465	2.148	20.000
CL8-Q	0.100	0.102	0.103	AVRG	0.10061465	2.148	20.000
Nonachlorobiphenyls	0.080	0.082	0.083	AVRG	7.813e-002	4.007	20.000
CL9-1Q	0.080	0.082	0.083	AVRG	7.813e-002	4.007	20.000
Decachlorobiphenyl	0.068	0.069	0.071	AVRG	6.67e-002	4.011	20.000
3,3,4,4-Tetrachlorobiphenyl_	0.477	0.472	0.474	AVRG	0.46613437	3.266	20.000
2-Fluorobiphenyl	1.090	1.064	1.072	AVRG	1.06550797	2.084	20.000
Tetrachloro-m-xylene	0.254	0.250	0.253	AVRG	0.25035906	2.005	20.000
Terphenyl-d14	0.997	0.997	1.006	AVRG	0.96760232	3.902	20.000

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS06 Calibration Date: 05/05/15 Time: 1415

Lab File ID: 6050502 Init. Calib. Date(s): 04/08/15 04/09/15

Init. Calib. Times: 2053 0050

GC Column: ZB-5 ID: 0.25 (mm)

COMPOUND	RRF OR AMOUNT	RRF1.0000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Monochlorobiphenyls	0.8110000	0.7179302	0.05	-11.48	20.00	AVRG
CL1-1Q	0.8110000	0.7179302	0.05	-11.48	20.00	AVRG
Dichlorobiphenyls	0.6230000	0.5621393	0.05	-9.77	20.00	AVRG
CL2-Q	0.6230000	0.5621393	0.05	-9.77	20.00	AVRG
2,2,4,6,6-Pentachlorobipheny	0.2790000	0.2635674	0.05	-5.53	50.00	AVRG
Trichlorobiphenyls	0.4240000	0.4031676	0.05	-4.91	20.00	AVRG
CL3-Q	0.4240000	0.4031676	0.05	-4.91	20.00	AVRG
Tetrachlorobiphenyls	0.2550000	0.2409496	0.05	-5.51	20.00	AVRG
CL4-Q	0.2550000	0.2409496	0.05	-5.51	20.00	AVRG
Pentachlorobiphenyls	0.2000000	0.1962307	0.05	-1.88	20.00	AVRG
CL5-Q	0.2000000	0.1962307	0.05	-1.88	20.00	AVRG
Hexachlorobiphenyls	0.1660000	0.1617507	0.05	-2.56	20.00	AVRG
CL6-Q	0.1660000	0.1617507	0.05	-2.56	20.00	AVRG
Heptachlorobiphenyls	0.1410000	0.1375044	0.05	-2.48	20.00	AVRG
CL7-1Q	0.1410000	0.1375044	0.05	-2.48	20.00	AVRG
Octachlorobiphenyls	0.1000000	9.57e-002	0.05	-4.30	20.00	AVRG
CL8-Q	0.1000000	9.57e-002	0.05	-4.30	20.00	AVRG
Nonachlorobiphenyls	7.8e-002	7.77e-002	0.05	-0.38	20.00	AVRG
CL9-1Q	7.8e-002	7.77e-002	0.05	-0.38	20.00	AVRG
Decachlorobiphenyl	6.7e-002	6.88e-002	0.05	2.69	20.00	AVRG
3,3,4,4-Tetrachlorobiphenyl_	0.4660000	0.4602571	0.05	-1.23	20.00	AVRG
2-Fluorobiphenyl	1.0660000	0.9272282	0.05	-13.02	20.00	AVRG
Tetrachloro-m-xylene	0.2500000	0.2222095	0.05	-11.12	20.00	AVRG
Terphenyl-d14	0.9670000	0.9727013	0.05	0.59	20.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Instrument ID: MS06 Calibration Date: 05/05/15 Time: 1949

Lab File ID: 6050513 Init. Calib. Date(s): 04/08/15 04/09/15

Init. Calib. Times: 2053 0050

GC Column: ZB-5 ID: 0.25 (mm)

COMPOUND	RRF OR AMOUNT	RRF1.0000 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Monochlorobiphenyls	0.8110000	0.7256930	0.05	-10.52	20.00	AVRG
CL1-1Q	0.8110000	0.7256930	0.05	-10.52	20.00	AVRG
Dichlorobiphenyls	0.6230000	0.5630437	0.05	-9.62	20.00	AVRG
CL2-Q	0.6230000	0.5630437	0.05	-9.62	20.00	AVRG
2,2,4,6,6-Pentachlorobipheny	0.2790000	0.2631157	0.05	-5.69	50.00	AVRG
Trichlorobiphenyls	0.4240000	0.4018817	0.05	-5.22	20.00	AVRG
CL3-Q	0.4240000	0.4018817	0.05	-5.22	20.00	AVRG
Tetrachlorobiphenyls	0.2550000	0.2405997	0.05	-5.65	20.00	AVRG
CL4-Q	0.2550000	0.2405997	0.05	-5.65	20.00	AVRG
Pentachlorobiphenyls	0.2000000	0.1965272	0.05	-1.74	20.00	AVRG
CL5-Q	0.2000000	0.1965272	0.05	-1.74	20.00	AVRG
Hexachlorobiphenyls	0.1660000	0.1615299	0.05	-2.69	20.00	AVRG
CL6-Q	0.1660000	0.1615299	0.05	-2.69	20.00	AVRG
Heptachlorobiphenyls	0.1410000	0.1351812	0.05	-4.13	20.00	AVRG
CL7-1Q	0.1410000	0.1351812	0.05	-4.13	20.00	AVRG
Octachlorobiphenyls	0.1000000	9.49e-002	0.05	-5.10	20.00	AVRG
CL8-Q	0.1000000	9.49e-002	0.05	-5.10	20.00	AVRG
Nonachlorobiphenyls	7.8e-002	7.78e-002	0.05	-0.26	20.00	AVRG
CL9-1Q	7.8e-002	7.78e-002	0.05	-0.26	20.00	AVRG
Decachlorobiphenyl	6.7e-002	6.9e-002	0.05	2.98	20.00	AVRG
3,3,4,4-Tetrachlorobiphenyl_	0.4660000	0.4651119	0.05	-0.19	20.00	AVRG
2-Fluorobiphenyl	1.0660000	0.9273854	0.05	-13.00	20.00	AVRG
Tetrachloro-m-xylene	0.2500000	0.2238646	0.05	-10.45	20.00	AVRG
Terphenyl-d14	0.9670000	0.9703705	0.05	0.35	20.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172725

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Lab File ID: 6050515 Lab Sample ID: 2172725

Instrument ID: MS06 Date Extracted: 05/04/15

Matrix: (soil/water) WATER Date Analyzed: 05/05/15

Level:(low/med) LOW Time Analyzed: 2048

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172726LCS	2172726	6050505	05/05/15
02	MRC-MW-DUP03	2067368003	6050507	05/05/15
03	MRC-MW-113A-	2067368002	6050508	05/05/15
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COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2172725

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix: (soil/water) WATER Lab Sample ID: 2172725

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 6050515

Level: (low/med) LOW Date Received: 05/04/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/04/15

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/05/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
27323-18-8	Monochlorobiphenyls	0.010	U
25512-42-9	Dichlorobiphenyls	0.010	U
25323-68-6	Trichlorobiphenyls	0.010	U
26914-33-0	Tetrachlorobiphenyls	0.020	U
25429-29-2	Pentachlorobiphenyls	0.020	U
26601-64-9	Hexachlorobiphenyls	0.020	U
28655-71-2	Heptachlorobiphenyls	0.030	U
31472-83-0	Octachlorobiphenyls	0.030	U
53742-07-7	Nonachlorobiphenyls	0.040	U
2051-24-3	Decachlorobiphenyl	0.050	U

FORM 2

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

	SAMPLE NO.	S1 (FBP)#	S2 (TCX)#	S3 (TPH)#	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172726LCS	69	66	90						0
02	MRC-MW-DUP03	75	70	115*						1
03	MRC-MW-113A-	69	65	109						0
04	2172725	57	55	89						0
05										
06										
07										
08										
09										
10										
11										
12										
13										
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27										
28										
29										
30										

	QC LIMITS
S1 (FBP) = 2-Fluorobiphenyl	(45-105)
S2 (TCX) = Tetrachloro-m-xylene	(36-112)
S3 (TPH) = Terphenyl-d14	(38-113)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix Spike - Sample No.: 680-PCB-2ND

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Monochlorobiphenyls	0.500000	0.00	0.503959	101	50-150
CL1-1Q	0.500000	0.00	0.503959	101	50-150
Dichlorobiphenyls	0.500000	0.00	0.456943	91	50-150
CL2-Q	0.500000	0.00	0.456943	91	50-150
Trichlorobiphenyls	0.500000	0.00	0.537079	107	50-150
CL3-Q	0.500000	0.00	0.537079	107	50-150
Tetrachlorobiphenyls	1.00000	0.00	1.03949	104	50-150
CL4-Q	1.00000	0.00	1.03949	104	50-150
Pentachlorobiphenyls	1.00000	0.00	0.994813	99	50-150
CL5-Q	1.00000	0.00	0.994813	99	50-150
Hexachlorobiphenyls	1.00000	0.00	1.01683	102	50-150
CL6-Q	1.00000	0.00	1.01683	102	50-150
Heptachlorobiphenyls	1.50000	0.00	1.54139	103	50-150
CL7-1Q	1.50000	0.00	1.54139	103	50-150
Octachlorobiphenyls	1.50000	0.00	1.52112	101	50-150
CL8-Q	1.50000	0.00	1.52112	101	50-150
Nonachlorobiphenyls	2.00000	0.00	2.11498	106	50-150
CL9-1Q	2.00000	0.00	2.11498	106	50-150
Decachlorobiphenyl	2.50000	0.00	2.55382	102	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 19 outside limits

COMMENTS: _____ZB-5_____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix Spike - Sample No.: 680-SUR-2ND

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Decachlorobiphenyl	12.5000	0.00	1.01927	8*	40-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 1 outside limits

COMMENTS: _____ZB-5_____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

Matrix Spike - Sample No.: 2172726LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Monochlorobiphenyls	0.500000	0.00	0.295339	59	40-140
Dichlorobiphenyls	0.500000	0.00	0.336538	67	40-140
Trichlorobiphenyls	0.500000	0.00	0.362168	72	40-140
Tetrachlorobiphenyls	2.00000	0.00	2.18505	109	40-140
Pentachlorobiphenyls	2.00000	0.00	1.84139	92	40-140
Hexachlorobiphenyls	1.00000	0.00	0.771224	77	40-140
Heptachlorobiphenyls	1.50000	0.00	1.15140	77	40-140
Octachlorobiphenyls	1.50000	0.00	1.13315	76	40-140
Nonachlorobiphenyls	2.00000	0.00	1.61204	81	40-140
Decachlorobiphenyl	2.50000	0.00	2.04726	82	40-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____ZB-5_____

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): 680-0.2 Date Analyzed: 04/08/15

Lab File ID (Standard): 6040805 Time Analyzed: 2123

Instrument ID: MS06 GC Column: ZB-5 ID:0.25(mm)

	IS1(PHN)		IS2(CRY)			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	106741	12.18	82199	18.41		
UPPER LIMIT	160112	12.34	123299	18.58		
LOWER LIMIT	74719	12.01	57539	18.24		
SAMPLE NO.						
01 680-PCB-2ND	109366	12.18	79603	18.41		
02 680-SUR-2ND	98947	12.18	75731	18.41		
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (PHN) = Phenanthrene-d10
IS2 (CRY) = Chrysene-d12

AREA UPPER LIMIT = + 50% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.17 minutes of internal standard RT
RT LOWER LIMIT = - 0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/05/15

Lab File ID (Standard): 6050502 Time Analyzed: 1415

Instrument ID: MS06 GC Column: ZB-5 ID:0.25(mm)

	IS1(PHN)		IS2(CRY)			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	109122	12.19	91488	18.43		
UPPER LIMIT	163683	12.36	137232	18.60		
LOWER LIMIT	76385	12.02	64042	18.27		
SAMPLE NO.						
01 2172726LCS	106638	12.19	91451	18.43		
02 MRC-MW-DUP03	99188	12.19	84783	18.42		
03 MRC-MW-113A-	104914	12.19	88316	18.43		
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (PHN) = Phenanthrene-d10
IS2 (CRY) = Chrysene-d12

AREA UPPER LIMIT = + 50% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.17 minutes of internal standard RT
RT LOWER LIMIT = - 0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM024

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/05/15

Lab File ID (Standard): 6050513 Time Analyzed: 1949

Instrument ID: MS06 GC Column: ZB-5 ID:0.25(mm)

	IS1(PHN)		IS2(CRY)			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	109838	12.19	93800	18.42		
UPPER LIMIT	164757	12.36	140700	18.59		
LOWER LIMIT	76887	12.02	65660	18.25		
SAMPLE NO.						
01 2172725	108485	12.19	99552	18.42		
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (PHN) = Phenanthrene-d10
IS2 (CRY) = Chrysene-d12

AREA UPPER LIMIT = + 50% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.17 minutes of internal standard RT
RT LOWER LIMIT = - 0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

Total Metals by 6020A Summary Forms

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-024 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2067368004	MRC-MW-105A-042715	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1043	0.1000	104		90 - 110	M	4/29/2015	00:26	A042915 00
	Arsenic	0.1048	0.1000	105		90 - 110	M	4/29/2015	00:26	A042915 00
	Barium	0.1034	0.1000	103		90 - 110	M	4/29/2015	00:26	A042915 00
	Beryllium	0.1019	0.1000	102		90 - 110	M	4/29/2015	00:26	A042915 00
	Cadmium	0.1031	0.1000	103		90 - 110	M	4/29/2015	00:26	A042915 00
	Chromium	0.1043	0.1000	104		90 - 110	M	4/29/2015	00:26	A042915 00
	Cobalt	0.1031	0.1000	103		90 - 110	M	4/29/2015	00:26	A042915 00
	Copper	0.1023	0.1000	102		90 - 110	M	4/29/2015	00:26	A042915 00
	Lead	0.1024	0.1000	102		90 - 110	M	4/29/2015	00:26	A042915 00
	Manganese	0.1039	0.1000	104		90 - 110	M	4/29/2015	00:26	A042915 00
	Molybdenum	0.1033	0.1000	103		90 - 110	M	4/29/2015	00:26	A042915 00
	Selenium	0.0988	0.1000	99		90 - 110	M	4/29/2015	00:26	A042915 00
	Silver	0.0993	0.1000	99		90 - 110	M	4/29/2015	00:26	A042915 00
	Thallium	0.0986	0.1000	99		90 - 110	M	4/29/2015	00:26	A042915 00
	Vanadium	0.1048	0.1000	105		90 - 110	M	4/29/2015	00:26	A042915 00
LLICV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/29/2015	00:34	A042915 00
	Arsenic	0.0032	0.0030	107		70 - 130	M	4/29/2015	00:34	A042915 00
	Barium	0.0055	0.0050	110		70 - 130	M	4/29/2015	00:34	A042915 00
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/29/2015	00:34	A042915 00
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/29/2015	00:34	A042915 00
	Chromium	0.0018	0.0020	90		70 - 130	M	4/29/2015	00:34	A042915 00
	Cobalt	0.0048	0.0050	96		70 - 130	M	4/29/2015	00:34	A042915 00
	Copper	0.0048	0.0050	96		70 - 130	M	4/29/2015	00:34	A042915 00
	Lead	0.0019	0.0020	95		70 - 130	M	4/29/2015	00:34	A042915 00
	Manganese	0.0050	0.0050	100		70 - 130	M	4/29/2015	00:34	A042915 00
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/29/2015	00:34	A042915 00
	Selenium	0.0052	0.0050	104		70 - 130	M	4/29/2015	00:34	A042915 00
	Silver	0.0019	0.0020	95		70 - 130	M	4/29/2015	00:34	A042915 00
	Thallium	0.0009	0.0010	90		70 - 130	M	4/29/2015	00:34	A042915 00
	Vanadium	0.0021	0.0020	105		70 - 130	M	4/29/2015	00:34	A042915 00

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1036	0.1000	104		90 - 110	M	4/29/2015	01:30	A042915 00
	Arsenic	0.1009	0.1000	101		90 - 110	M	4/29/2015	01:30	A042915 00
	Barium	0.1053	0.1000	105		90 - 110	M	4/29/2015	01:30	A042915 00
	Beryllium	0.0968	0.1000	97		90 - 110	M	4/29/2015	01:30	A042915 00
	Cadmium	0.1013	0.1000	101		90 - 110	M	4/29/2015	01:30	A042915 00
	Chromium	0.1033	0.1000	103		90 - 110	M	4/29/2015	01:30	A042915 00
	Cobalt	0.1039	0.1000	104		90 - 110	M	4/29/2015	01:30	A042915 00
	Copper	0.1032	0.1000	103		90 - 110	M	4/29/2015	01:30	A042915 00
	Lead	0.1061	0.1000	106		90 - 110	M	4/29/2015	01:30	A042915 00
	Manganese	0.1042	0.1000	104		90 - 110	M	4/29/2015	01:30	A042915 00
	Molybdenum	0.1016	0.1000	102		90 - 110	M	4/29/2015	01:30	A042915 00
	Selenium	0.0982	0.1000	98		90 - 110	M	4/29/2015	01:30	A042915 00
	Silver	0.0982	0.1000	98		90 - 110	M	4/29/2015	01:30	A042915 00
	Thallium	0.0985	0.1000	98		90 - 110	M	4/29/2015	01:30	A042915 00
	Vanadium	0.1032	0.1000	103		90 - 110	M	4/29/2015	01:30	A042915 00
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/29/2015	01:38	A042915 00
	Arsenic	0.0033	0.0030	110		70 - 130	M	4/29/2015	01:38	A042915 00
	Barium	0.0056	0.0050	112		70 - 130	M	4/29/2015	01:38	A042915 00
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/29/2015	01:38	A042915 00
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/29/2015	01:38	A042915 00
	Chromium	0.0017	0.0020	85		70 - 130	M	4/29/2015	01:38	A042915 00
	Cobalt	0.0049	0.0050	98		70 - 130	M	4/29/2015	01:38	A042915 00
	Copper	0.0048	0.0050	96		70 - 130	M	4/29/2015	01:38	A042915 00
	Lead	0.0019	0.0020	95		70 - 130	M	4/29/2015	01:38	A042915 00
	Manganese	0.0049	0.0050	98		70 - 130	M	4/29/2015	01:38	A042915 00
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/29/2015	01:38	A042915 00
	Selenium	0.0052	0.0050	104		70 - 130	M	4/29/2015	01:38	A042915 00
	Silver	0.0019	0.0020	95		70 - 130	M	4/29/2015	01:38	A042915 00
	Thallium	0.0009	0.0010	90		70 - 130	M	4/29/2015	01:38	A042915 00
	Vanadium	0.0022	0.0020	110		70 - 130	M	4/29/2015	01:38	A042915 00

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1055	0.1000	106		90 - 110	M	4/29/2015	02:15	A042915 00
	Arsenic	0.1002	0.1000	100		90 - 110	M	4/29/2015	02:15	A042915 00
	Barium	0.1041	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
	Beryllium	0.0993	0.1000	99		90 - 110	M	4/29/2015	02:15	A042915 00
	Cadmium	0.1025	0.1000	102		90 - 110	M	4/29/2015	02:15	A042915 00
	Chromium	0.1040	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
	Cobalt	0.1038	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
	Copper	0.1035	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
	Lead	0.1028	0.1000	103		90 - 110	M	4/29/2015	02:15	A042915 00
	Manganese	0.1042	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
	Molybdenum	0.1034	0.1000	103		90 - 110	M	4/29/2015	02:15	A042915 00
	Selenium	0.0965	0.1000	96		90 - 110	M	4/29/2015	02:15	A042915 00
	Silver	0.0995	0.1000	100		90 - 110	M	4/29/2015	02:15	A042915 00
	Thallium	0.0990	0.1000	99		90 - 110	M	4/29/2015	02:15	A042915 00
	Vanadium	0.1036	0.1000	104		90 - 110	M	4/29/2015	02:15	A042915 00
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	4/29/2015	02:22	A042915 00
	Arsenic	0.0033	0.0030	110		70 - 130	M	4/29/2015	02:22	A042915 00
	Barium	0.0057	0.0050	114		70 - 130	M	4/29/2015	02:22	A042915 00
	Beryllium	0.0011	0.0010	110		70 - 130	M	4/29/2015	02:22	A042915 00
	Cadmium	0.0011	0.0010	110		70 - 130	M	4/29/2015	02:22	A042915 00
	Chromium	0.0018	0.0020	90		70 - 130	M	4/29/2015	02:22	A042915 00
	Cobalt	0.0049	0.0050	98		70 - 130	M	4/29/2015	02:22	A042915 00
	Copper	0.0048	0.0050	96		70 - 130	M	4/29/2015	02:22	A042915 00
	Lead	0.0019	0.0020	95		70 - 130	M	4/29/2015	02:22	A042915 00
	Manganese	0.0051	0.0050	102		70 - 130	M	4/29/2015	02:22	A042915 00
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/29/2015	02:22	A042915 00
	Selenium	0.0052	0.0050	104		70 - 130	M	4/29/2015	02:22	A042915 00
	Silver	0.0020	0.0020	100		70 - 130	M	4/29/2015	02:22	A042915 00
	Thallium	0.0009	0.0010	90		70 - 130	M	4/29/2015	02:22	A042915 00
	Vanadium	0.0022	0.0020	110		70 - 130	M	4/29/2015	02:22	A042915 00
ICV										
	Nickel	0.0903	0.1000	90		90 - 110	M	4/29/2015	10:50	A042915A 1

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLICV										
	Nickel	0.0046	0.0050	92		70 - 130	M	4/29/2015	10:57	A042915A 1
LLCCV										
	Nickel	0.0047	0.0050	94		70 - 130	M	4/29/2015	13:20	A042915A 1
CCV										
	Nickel	0.0914	0.1000	91		90 - 110	M	4/29/2015	13:24	A042915A 1

6020 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/29/2015	00:30	A042915 0000 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	00:30	A042915 0000 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/29/2015	00:30	A042915 0000 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/29/2015	00:30	A042915 0000 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	00:30	A042915 0000 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	00:30	A042915 0000 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	00:30	A042915 0000 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	00:30	A042915 0000 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/29/2015	00:30	A042915 0000 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	00:30	A042915 0000 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/29/2015	01:34	A042915 0000 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	01:34	A042915 0000 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/29/2015	01:34	A042915 0000 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/29/2015	01:34	A042915 0000 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	01:34	A042915 0000 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	01:34	A042915 0000 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	01:34	A042915 0000 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	01:34	A042915 0000 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/29/2015	01:34	A042915 0000 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	01:34	A042915 0000 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/29/2015	02:19	A042915 0000 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	02:19	A042915 0000 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/29/2015	02:19	A042915 0000 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/29/2015	02:19	A042915 0000 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	02:19	A042915 0000 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	02:19	A042915 0000 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	02:19	A042915 0000 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	02:19	A042915 0000 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/29/2015	02:19	A042915 0000 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/29/2015	02:19	A042915 0000 (
ICB										
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	10:54	A042915A 102
CCB										
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/29/2015	13:17	A042915A 102

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2170080			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	4/29/2015	01:00	A042915 0000 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	4/29/2015	01:00	A042915 0000 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	01:00	A042915 0000 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	4/29/2015	01:00	A042915 0000 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	4/29/2015	01:00	A042915 0000 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	4/29/2015	01:00	A042915 0000 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	01:00	A042915 0000 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	01:00	A042915 0000 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	4/29/2015	01:00	A042915 0000 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	01:00	A042915 0000 (
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	4/29/2015	01:00	A042915 0000 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	01:00	A042915 0000 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	4/29/2015	01:00	A042915 0000 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	4/29/2015	01:00	A042915 0000 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	4/29/2015	01:00	A042915 0000 (
2170609			**QC-WATER**								
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	4/29/2015	12:36	A042915A 1024

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/29/2015	00:37	A042915 0000
	Arsenic	0.0002				-0.00300 - -0.00300	4/29/2015	00:37	A042915 0000
	Barium	0.0004				-0.01000 - -0.01000	4/29/2015	00:37	A042915 0000
	Beryllium	0.00002				-0.001000 - -0.001000	4/29/2015	00:37	A042915 0000
	Cadmium	0.0011			*	-0.00100 - -0.00100	4/29/2015	00:37	A042915 0000
	Chromium	0.0003				-0.00400 - -0.00400	4/29/2015	00:37	A042915 0000
	Cobalt	0.0006				-0.00600 - -0.00600	4/29/2015	00:37	A042915 0000
	Copper	0.0013				-0.00500 - -0.00500	4/29/2015	00:37	A042915 0000
	Lead	0.0001				-0.00200 - -0.00200	4/29/2015	00:37	A042915 0000
	Manganese	0.0012				-0.01000 - -0.01000	4/29/2015	00:37	A042915 0000
	Molybdenum	2.0565	2.00000	103		80 - 120%	4/29/2015	00:37	A042915 0000
	Selenium	0.0000				-0.00500 - -0.00500	4/29/2015	00:37	A042915 0000
	Silver	0.0004				-0.00200 - -0.00200	4/29/2015	00:37	A042915 0000
	Thallium	0.00003				-0.001000 - -0.001000	4/29/2015	00:37	A042915 0000
	Vanadium	0.0002				-0.00200 - -0.00200	4/29/2015	00:37	A042915 0000
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	4/29/2015	00:41	A042915 0000
	Arsenic	0.0214	0.02000	107		80 - 120%	4/29/2015	00:41	A042915 0000
	Barium	0.0003				-0.00500 - -0.00500	4/29/2015	00:41	A042915 0000
	Beryllium	0.00003				-0.001000 - -0.001000	4/29/2015	00:41	A042915 0000
	Cadmium	0.0103	0.01000	103		80 - 120%	4/29/2015	00:41	A042915 0000
	Chromium	0.0184	0.02000	92		80 - 120%	4/29/2015	00:41	A042915 0000
	Cobalt	0.0363	0.04000	91		80 - 120%	4/29/2015	00:41	A042915 0000
	Copper	0.0182	0.02000	91		80 - 120%	4/29/2015	00:41	A042915 0000
	Lead	0.0002				-0.00200 - -0.00200	4/29/2015	00:41	A042915 0000
	Manganese	0.0193	0.02000	96		80 - 120%	4/29/2015	00:41	A042915 0000
	Molybdenum	2.0973	2.00000	105		80 - 120%	4/29/2015	00:41	A042915 0000
	Selenium	0.0188	0.02000	94		80 - 120%	4/29/2015	00:41	A042915 0000
	Silver	0.0174	0.02000	87		80 - 120%	4/29/2015	00:41	A042915 0000
	Thallium	0.00002				-0.001000 - -0.001000	4/29/2015	00:41	A042915 0000
	Vanadium	0.0405	0.04000	101		80 - 120%	4/29/2015	00:41	A042915 0000
ICSAB									
	Nickel	0.0372	0.04000	93		80 - 120%	4/29/2015	11:36	A042915A 10

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Nickel	0.0007				-0.00500 - -0.00500	4/29/2015	11:43	A042915A 10

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2170081									
	Antimony	mg/L	0.2220	0.2277		103		80 - 120	M
	Arsenic	mg/L	0.2220	0.2173		98		80 - 120	M
	Barium	mg/L	2.2220	2.6120		118		80 - 120	M
	Beryllium	mg/L	0.2220	0.2045		92		80 - 120	M
	Cadmium	mg/L	0.2220	0.2514		113		80 - 120	M
	Chromium	mg/L	0.2220	0.2347		106		80 - 120	M
	Cobalt	mg/L	0.2220	0.2400		108		80 - 120	M
	Copper	mg/L	0.2220	0.2334		105		80 - 120	M
	Lead	mg/L	0.2220	0.2431		110		80 - 120	M
	Manganese	mg/L	0.2220	0.2436		110		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2312		104		80 - 120	M
	Selenium	mg/L	0.2220	0.1998		90		80 - 120	M
	Silver	mg/L	0.1110	0.1162		105		80 - 120	M
	Thallium	mg/L	0.2220	0.2262		102		80 - 120	M
	Vanadium	mg/L	0.2220	0.2324		105		80 - 120	M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2170610									
	Nickel	mg/L	0.2220	0.2418		109		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69774						
2170080	MB for HBN 69774 [MDIG/50573	MB	QC-WAT	4/28/15	45.0	50.0	
2170081	LCS for HBN 69774 [MDIG/50573	LCS	QC-WAT	4/28/15	45.0	50.0	
2067368004	MRC-MW-105A-042715	SAM	WATER	4/28/15	45.0	50.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69974						
2170609	MB for HBN 69974 [MDIG/50587	MB	QC-WAT	4/29/15	45.0	50.0	
2170610	LCS for HBN 69974 [MDIG/50587	LCS	QC-WAT	4/29/15	45.0	50.0	
2067368004	MRC-MW-105A-042715	SAM	WATER	4/29/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042915 0000

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0000																										
BLK	1.00	0004			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
STANDARD 1	1.00	0008			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
STANDARD 2	1.00	0011			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
STANDARD 3	1.00	0015			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
STANDARD 4	1.00	0019			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
STANDARD 5	1.00	0022			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ICV	1.00	0026			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ICB1	1.00	0030			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
LLICV	1.00	0034			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ICS-A1	1.00	0037			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ICS-AB1	1.00	0041			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ZZZZZZ	1.00	0045																										
ZZZZZZ	1.00	0049																										
ZZZZZZ	1.00	0052																										
ZZZZZZ	1.00	0056																										
2170080	1.00	0100			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
2170081	1.00	0104			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ZZZZZZ	1.00	0107																										
ZZZZZZ	1.00	0111																										
ZZZZZZ	1.00	0115																										
ZZZZZZ	1.00	0119																										
ZZZZZZ	1.00	0123																										
ZZZZZZ	1.00	0127																										
CCV1	1.00	0130			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
CCB1	1.00	0134			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
LLCCV	1.00	0138			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ZZZZZZ	1.00	0141																										
ZZZZZZ	1.00	0145																										
ZZZZZZ	1.00	0149																										
ZZZZZZ	5.00	0153																										
ZZZZZZ	1.00	0156																										
2067368004	1.00	0200			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ZZZZZZ	10.00	0204																										
ZZZZZZ	10.00	0207																										
ZZZZZZ	1.00	0211																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042915 0000

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
CCV2	1.00	0215			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
CCB2	1.00	0219			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
LLCCV	1.00	0222			X	X	X	X	X		X	X	X		X		X				X	X		X	X			*
ZZZZZZ	1.00	0226																										
ZZZZZZ	1.00	0230																										
ZZZZZZ	1.00	0233																										
ZZZZZZ	1.00	0237																										
ZZZZZZ	1.00	0241																										
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0252																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0303																										
ZZZZZZ	1.00	0307																										
ZZZZZZ	1.00	0311																										
ZZZZZZ	1.00	0314																										
ZZZZZZ	1.00	0318																										
ZZZZZZ	1.00	0322																										
ZZZZZZ	1.00	0325																										
ZZZZZZ	1.00	0329																										
ZZZZZZ	1.00	0333																										
ZZZZZZ	1.00	0337																										
ZZZZZZ	1.00	0340																										
ZZZZZZ	1.00	0344																										
ZZZZZZ	1.00	0348																										
ZZZZZZ	1.00	0352																										
ZZZZZZ	1.00	0357																										
ZZZZZZ	1.00	0401																										
ZZZZZZ	1.00	0405																										
ZZZZZZ	1.00	0408																										
ZZZZZZ	1.00	0412																										
ZZZZZZ	1.00	0416																										
ZZZZZZ	1.00	0420																										
ZZZZZZ	1.00	0423																										
ZZZZZZ	1.00	0428																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042915 0000

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0431																								
ZZZZZZ	1.00	0435																								
ZZZZZZ	1.00	0439																								
ZZZZZZ	1.00	0443																								
ZZZZZZ	1.00	0446																								
ZZZZZZ	1.00	0450																								
ZZZZZZ	1.00	0454																								
ZZZZZZ	1.00	0458																								
ZZZZZZ	20.00	0501																								
ZZZZZZ	1.00	0505																								
ZZZZZZ	1.00	0509																								
ZZZZZZ	1.00	0517																								
ZZZZZZ	1.00	0522																								
ZZZZZZ	1.00	0526																								
ZZZZZZ	1.00	0529																								

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042915A 102

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1024																								
BLK	1.00	1028																X								
STANDARD 1	1.00	1031																X								
STANDARD 2	1.00	1035																X								
STANDARD 3	1.00	1039																X								
STANDARD 4	1.00	1042																X								
STANDARD 5	1.00	1046																X								
ICV	1.00	1050																X								
ICB1	1.00	1054																X								
LLICV	1.00	1057																X								
ZZZZZZ	1.00	1101																								
ICS-AB1	1.00	1136																X								
ICS-A2	1.00	1143																X								
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1232																								
2170609	1.00	1236																X								
2170610	1.00	1240																X								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1306																								
2067368004	1.00	1309																X								
ZZZZZZ	1.00	1313																								
CCB1	1.00	1317																X								
LLCCV	1.00	1320																X								
CCV2	1.00	1324																X								
ZZZZZZ	1.00	1331																								
ZZZZZZ	5.00	1335																								
ZZZZZZ	1.00	1338																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1346																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1353																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A042915A 102

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1357																								
ZZZZZZ	1.00	1401																								
ZZZZZZ	1.00	1404																								
ZZZZZZ	1.00	1408																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1423																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1430																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	10.00	1438																								
ZZZZZZ	10.00	1442																								
ZZZZZZ	1.00	1445																								
ZZZZZZ	1.00	1449																								
ZZZZZZ	1.00	1453																								
ZZZZZZ	1.00	1456																								
ZZZZZZ	1.00	1501																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1515																								
ZZZZZZ	1.00	1544																								
ZZZZZZ	1.00	1547																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	10.00	1555																								
ZZZZZZ	1.00	1558																								
ZZZZZZ	1.00	1602																								
ZZZZZZ	1.00	1611																								
ZZZZZZ	1.00	1614																								
ZZZZZZ	1.00	1618																								

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0000												
BLK	BLK	0004	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0008	104		113		107		105		102		105	
STANDARD 2	STANDARD 2	0011	104		106		107		105		102		101	
STANDARD 3	STANDARD 3	0015	106		115		113		109		100		103	
STANDARD 4	STANDARD 4	0019	107		109		113		110		108		101	
STANDARD 5	STANDARD 5	0022	109		112		115		113		109		110	
ICV	ICV	0026	104		104		107		105		112		103	
ICB1	ICB	0030	104		108		109		104		89		107	
LLICV	LLICV	0034	104		103		106		104		105		104	
ICS-A1	ICSA	0037	92		101		97		102		105		107	
ICS-AB1	ICSAB	0041	96		105		101		104		105		101	
CHECK	ZZZZZZ	0045												
CHECK	ZZZZZZ	0049												
2170076	ZZZZZZ	0052												
2170077	ZZZZZZ	0056												
2170080	MB for HBN 69774	0100	102		108		103		100		97		111	
2170081	LCS for HBN 6977	0104	105		112		110		103		95		109	
2067242001	ZZZZZZ	0107												
2067242002	ZZZZZZ	0111												
2170078	ZZZZZZ	0115												
2170079	ZZZZZZ	0119												
2067213008	ZZZZZZ	0123												
2067213008S	ZZZZZZ	0127												
CCV1	CCV	0130	111		116		118		114		109		112	
CCB1	CCB	0134	107		113		112		109		102		111	
LLCCV	LLCCV	0138	108		113		114		113		107		111	
2067213008S	ZZZZZZ	0141												
2067213009	ZZZZZZ	0145												
2067213010	ZZZZZZ	0149												
2067213010L	ZZZZZZ	0153												
2067213010P	ZZZZZZ	0156												
2067368004	MRC-MW-105A-0427	0200	95		113		107		104		93		107	
2067242001	ZZZZZZ	0204												
2067242002	ZZZZZZ	0207												
CHECK	ZZZZZZ	0211												
CCV2	CCV	0215	107		111		113		111		107		110	
CCB2	CCB	0219	105		112		113		108		103		108	
LLCCV	LLCCV	0222	105		110		111		109		101		107	
2067297001	ZZZZZZ	0226												
2067297002	ZZZZZZ	0230												
2067297003	ZZZZZZ	0233												
2067297004	ZZZZZZ	0237												
2067297005	ZZZZZZ	0241												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067297006	ZZZZZZ	0245												
2067297007	ZZZZZZ	0248												
2067297008	ZZZZZZ	0252												
2067297009	ZZZZZZ	0256												
2067297010	ZZZZZZ	0259												
CCV3	ZZZZZZ	0303												
CCB3	ZZZZZZ	0307												
LLCCV	ZZZZZZ	0311												
2067297012	ZZZZZZ	0314												
2067297013	ZZZZZZ	0318												
2067297014	ZZZZZZ	0322												
2067297015	ZZZZZZ	0325												
2067297016	ZZZZZZ	0329												
2067297017	ZZZZZZ	0333												
2067297018	ZZZZZZ	0337												
2067297019	ZZZZZZ	0340												
2067297020	ZZZZZZ	0344												
2067297021	ZZZZZZ	0348												
CCV4	ZZZZZZ	0352												
CCB4	ZZZZZZ	0357												
LLCCV	ZZZZZZ	0401												
2067297011	ZZZZZZ	0405												
2067297022	ZZZZZZ	0408												
2067297023	ZZZZZZ	0412												
2066359006	ZZZZZZ	0416												
2169453	ZZZZZZ	0420												
2169454	ZZZZZZ	0423												
2169453	ZZZZZZ	0428												
2169454	ZZZZZZ	0431												
2066872001	ZZZZZZ	0435												
2066872002	ZZZZZZ	0439												
CCV5	ZZZZZZ	0443												
CCB5	ZZZZZZ	0446												
LLCCV	ZZZZZZ	0450												
2066872003	ZZZZZZ	0454												
2066872004	ZZZZZZ	0458												
2066872005	ZZZZZZ	0501												
CHECK	ZZZZZZ	0505												
CCV6	ZZZZZZ	0509												
CCB6	ZZZZZZ	0517												
CCB7	ZZZZZZ	0522												
LLCCV	ZZZZZZ	0526												
LLCCV	ZZZZZZ	0529												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	1024												
BLK	BLK	1028	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	1031	110		108		111		112		107		99	
STANDARD 2	STANDARD 2	1035	107		105		109		109		109		102	
STANDARD 3	STANDARD 3	1039	99		99		98		97		100		100	
STANDARD 4	STANDARD 4	1042	105		103		105		106		103		111	
STANDARD 5	STANDARD 5	1046	109		105		109		111		102		100	
ICV	ICV	1050	105		101		105		106		107		96	
ICB1	ICB	1054	97		97		95		94		101		99	
LLICV	LLICV	1057	106		102		106		106		104		101	
ICS-A1	ZZZZZZ	1101												
ICS-AB1	ICSAB	1136	95		104		99		103		102		99	
ICS-A2	ICSA	1143	96		104		100		101		92		103	
CHECK	ZZZZZZ	1228												
CHECK	ZZZZZZ	1232												
2170609	MB for HBN 69974	1236	105		112		107		102		93		109	
2170610	LCS for HBN 6997	1240	103		109		105		99		91		106	
2067414001	ZZZZZZ	1243												
2067414002	ZZZZZZ	1247												
2067414003	ZZZZZZ	1251												
2067414004	ZZZZZZ	1254												
2067214001	ZZZZZZ	1258												
2067214001S	ZZZZZZ	1302												
2067214001S	ZZZZZZ	1306												
2067368004	MRC-MW-105A-0427	1309	94		104		101		102		91		106	
CCV1	ZZZZZZ	1313												
CCB1	CCB	1317	108		110		109		107		100		107	
LLCCV	LLCCV	1320	108		109		111		110		103		107	
CCV2	CCV	1324	108		109		110		111		103		108	
2067542002	ZZZZZZ	1331												
2067542002L	ZZZZZZ	1335												
2067542003	ZZZZZZ	1338												
2067542004	ZZZZZZ	1342												
2067542005	ZZZZZZ	1346												
2067542006	ZZZZZZ	1349												
2067542007	ZZZZZZ	1353												
2067542008	ZZZZZZ	1357												
2067542009	ZZZZZZ	1401												
2067542010	ZZZZZZ	1404												
CCV3	ZZZZZZ	1408												
CCB2	ZZZZZZ	1412												
LLCCV	ZZZZZZ	1415												
2067542011	ZZZZZZ	1419												
2067542012	ZZZZZZ	1423												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067542013	ZZZZZZ	1427												
2067542014	ZZZZZZ	1430												
2067542015	ZZZZZZ	1434												
2067542014	ZZZZZZ	1438												
2067542015	ZZZZZZ	1442												
2067297010	ZZZZZZ	1445												
CCV4	ZZZZZZ	1449												
CCB3	ZZZZZZ	1453												
LLCCV	ZZZZZZ	1456												
2066872003	ZZZZZZ	1501												
2066872004	ZZZZZZ	1510												
2170610	ZZZZZZ	1515												
CCV5	ZZZZZZ	1544												
CCB4	ZZZZZZ	1547												
LLCCV	ZZZZZZ	1551												
2066872005	ZZZZZZ	1555												
CHECK	ZZZZZZ	1558												
CHECK	ZZZZZZ	1602												
CCV6	ZZZZZZ	1611												
CCB5	ZZZZZZ	1614												
LLCCV	ZZZZZZ	1618												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0000												
BLK	0004	100											
STANDARD 1	0008	107											
STANDARD 2	0011	108											
STANDARD 3	0015	114											
STANDARD 4	0019	112											
STANDARD 5	0022	116											
ICV	0026	106											
ICB	0030	109											
LLICV	0034	106											
ICSA	0037	102											
ICSAB	0041	108											
ZZZZZZ	0045												
ZZZZZZ	0049												
ZZZZZZ	0052												
ZZZZZZ	0056												
MB for HBN 69774	0100	105											
LCS for HBN 6977	0104	112											
ZZZZZZ	0107												
ZZZZZZ	0111												
ZZZZZZ	0115												
ZZZZZZ	0119												
ZZZZZZ	0123												
ZZZZZZ	0127												
CCV	0130	117											
CCB	0134	112											
LLCCV	0138	113											
ZZZZZZ	0141												
ZZZZZZ	0145												
ZZZZZZ	0149												
ZZZZZZ	0153												
ZZZZZZ	0156												
MRC-MW-105A-0427	0200	111											
ZZZZZZ	0204												
ZZZZZZ	0207												
ZZZZZZ	0211												
CCV	0215	112											
CCB	0219	113											
LLCCV	0222	110											
ZZZZZZ	0226												
ZZZZZZ	0230												
ZZZZZZ	0233												
ZZZZZZ	0237												
ZZZZZZ	0241												
ZZZZZZ	0245												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
ZZZZZZ	0307												
ZZZZZZ	0311												
ZZZZZZ	0314												
ZZZZZZ	0318												
ZZZZZZ	0322												
ZZZZZZ	0325												
ZZZZZZ	0329												
ZZZZZZ	0333												
ZZZZZZ	0337												
ZZZZZZ	0340												
ZZZZZZ	0344												
ZZZZZZ	0348												
ZZZZZZ	0352												
ZZZZZZ	0357												
ZZZZZZ	0401												
ZZZZZZ	0405												
ZZZZZZ	0408												
ZZZZZZ	0412												
ZZZZZZ	0416												
ZZZZZZ	0420												
ZZZZZZ	0423												
ZZZZZZ	0428												
ZZZZZZ	0431												
ZZZZZZ	0435												
ZZZZZZ	0439												
ZZZZZZ	0443												
ZZZZZZ	0446												
ZZZZZZ	0450												
ZZZZZZ	0454												
ZZZZZZ	0458												
ZZZZZZ	0501												
ZZZZZZ	0505												
ZZZZZZ	0509												
ZZZZZZ	0517												
ZZZZZZ	0522												
ZZZZZZ	0526												
ZZZZZZ	0529												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1024												
BLK	1028	100											
STANDARD 1	1031	111											
STANDARD 2	1035	109											
STANDARD 3	1039	99											
STANDARD 4	1042	105											
STANDARD 5	1046	109											
ICV	1050	106											
ICB	1054	96											
LLICV	1057	106											
ZZZZZZ	1101												
ICSAB	1136	106											
ICSA	1143	107											
ZZZZZZ	1228												
ZZZZZZ	1232												
MB for HBN 69974	1236	109											
LCS for HBN 6997	1240	108											
ZZZZZZ	1243												
ZZZZZZ	1247												
ZZZZZZ	1251												
ZZZZZZ	1254												
ZZZZZZ	1258												
ZZZZZZ	1302												
ZZZZZZ	1306												
MRC-MW-105A-0427	1309	105											
ZZZZZZ	1313												
CCB	1317	109											
LLCCV	1320	110											
CCV	1324	110											
ZZZZZZ	1331												
ZZZZZZ	1335												
ZZZZZZ	1338												
ZZZZZZ	1342												
ZZZZZZ	1346												
ZZZZZZ	1349												
ZZZZZZ	1353												
ZZZZZZ	1357												
ZZZZZZ	1401												
ZZZZZZ	1404												
ZZZZZZ	1408												
ZZZZZZ	1412												
ZZZZZZ	1415												
ZZZZZZ	1419												
ZZZZZZ	1423												
ZZZZZZ	1427												

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM024|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-024

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 04/29/2015 End Date: 04/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1430												
ZZZZZZ	1434												
ZZZZZZ	1438												
ZZZZZZ	1442												
ZZZZZZ	1445												
ZZZZZZ	1449												
ZZZZZZ	1453												
ZZZZZZ	1456												
ZZZZZZ	1501												
ZZZZZZ	1510												
ZZZZZZ	1515												
ZZZZZZ	1544												
ZZZZZZ	1547												
ZZZZZZ	1551												
ZZZZZZ	1555												
ZZZZZZ	1558												
ZZZZZZ	1602												
ZZZZZZ	1611												
ZZZZZZ	1614												
ZZZZZZ	1618												

Total Metals by 6010C Summary Forms

6010C 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-024 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2067368004	MRC-MW-105A-042715	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

6010C 3015

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.010	1.000	101		90 - 110	P	4/29/2015	08:53	042915A 30
CCV	Iron	2.459	2.500	98		90 - 110	P	4/29/2015	09:03	042915A 30
CCV	Iron	2.532	2.500	101		90 - 110	P	4/29/2015	09:50	042915A 30
CCV	Iron	2.597	2.500	104		90 - 110	P	4/29/2015	10:28	042915A 30
CCV	Iron	2.658	2.500	106		90 - 110	P	4/29/2015	11:06	042915A 30
LLCCV	Iron	0.064	0.060	107		70 - 130	P	4/29/2015	11:30	042915A 30

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.066	0.060	110		70 - 130	P	4/29/2015	08:59	042915A 3

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	08:56	042915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	09:53	042915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	10:31	042915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	11:09	042915A 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2170084			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/29/2015	09:56	042915A 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	114.8	125.0	92		80 - 120%	4/29/2015	09:08	042915A 3015
ICSAB									
	Iron	118.1	125.0	94		80 - 120%	4/29/2015	09:11	042915A 3015
ICSA									
	Iron	111.1	125.0	89		80 - 120%	4/29/2015	11:33	042915A 3015
ICSAB									
	Iron	116.1	125.0	93		80 - 120%	4/29/2015	11:36	042915A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2170085									
	Iron	mg/L	1.11	1.196		108		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69775						
2170084	MB for HBN 69775 [MDIG/50574	MB	QC-WAT	4/28/15	45.0	50.0	
2170085	LCS for HBN 69775 [MDIG/50574	LCS	QC-WAT	4/28/15	45.0	50.0	
2067368004	MRC-MW-105A-042715	SAM	WATER	4/28/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0838												X																
ICAL2	1.00	0841												X																
ICAL3	1.00	0844												X																
ICAL4	1.00	0847												X																
ICAL5	1.00	0850												X																
ICV1	1.00	0853												X																
ICB1	1.00	0856												X																
CRDL1	1.00	0859												X																
CCV1	1.00	0903												X																
HIGH	1.00	0905												X																
ICS-A1	1.00	0908												X																
ICS-AB1	1.00	0911												X																
ZZZZZZ	1.00	0918																												
ZZZZZZ	1.00	0921																												
ZZZZZZ	5.00	0924																												
ZZZZZZ	5.00	0927																												
ZZZZZZ	5.00	0931																												
ZZZZZZ	5.00	0934																												
ZZZZZZ	5.00	0937																												
ZZZZZZ	5.00	0940																												
ZZZZZZ	1.00	0943																												
ZZZZZZ	1.00	0947																												
CCV2	1.00	0950												X																
CCB1	1.00	0953												X																
2170084	1.00	0956												X																
2170085	1.00	0959												X																
2067368004	1.00	1002												X																
ZZZZZZ	5.00	1006																												
ZZZZZZ	5.00	1009																												
ZZZZZZ	5.00	1012																												
ZZZZZZ	5.00	1015																												
ZZZZZZ	5.00	1018																												
ZZZZZZ	5.00	1022																												
ZZZZZZ	5.00	1025																												
CCV3	1.00	1028												X																
CCB2	1.00	1031												X																

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1034																									
ZZZZZZ	5.00	1037																									
ZZZZZZ	5.00	1041																									
ZZZZZZ	5.00	1044																									
ZZZZZZ	5.00	1047																									
ZZZZZZ	5.00	1050																									
ZZZZZZ	5.00	1054																									
ZZZZZZ	5.00	1057																									
ZZZZZZ	1.00	1100																									
ZZZZZZ	1.00	1103																									
CCV4	1.00	1106											X														
CCB3	1.00	1109											X														
ZZZZZZ	1.00	1113																									
LLCCV	1.00	1130											X														
ICS-A2	1.00	1133											X														
ICS-AB2	1.00	1136											X														
ZZZZZZ	5.00	1141																									
ZZZZZZ	1.00	1144																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1150																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	1.00	1159																									
ZZZZZZ	1.00	1203																									
ZZZZZZ	1.00	1206																									
ZZZZZZ	1.00	1209																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1218																									
ZZZZZZ	1.00	1221																									
ZZZZZZ	1.00	1224																									
ZZZZZZ	1.00	1228																									
ZZZZZZ	1.00	1231																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1237																									
ZZZZZZ	1.00	1240																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-024

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1308																								
ZZZZZZ	5.00	1311																								
ZZZZZZ	1.00	1314																								
ZZZZZZ	1.00	1317																								
ZZZZZZ	5.00	1321																								
ZZZZZZ	5.00	1324																								
ZZZZZZ	1.00	1327																								
ZZZZZZ	1.00	1330																								
ZZZZZZ	1.00	1334																								
ZZZZZZ	5.00	1337																								
ZZZZZZ	5.00	1340																								
ZZZZZZ	5.00	1344																								
ZZZZZZ	5.00	1347																								
ZZZZZZ	1.00	1400																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1416																								
ZZZZZZ	1.00	1436																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1443																								

Total Mercury by 7470A Summary Forms

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-024 Method Type: 7470A SOW No.:

Contract: TMM024|112IC06247 Lab Code: CAS Case No.: Lockhee SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2067368004	MRC-MW-105A-042715	
2067368004S	MRC-MW-105A-042715S	Matrix Spike
2067368004SD	MRC-MW-105A-042715SD	Matrix Spike Duplicate

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	13:30	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:21	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:35	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:48	050415W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	13:31	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:23	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:36	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:49	050415W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171915			QC-WATER								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/4/2015	14:31	050415W

7470A
- 5a -
MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-024

Contract: TMM024.1 12IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067368004 **Client ID:** MRC-MW-105A-042715S **LIMS ID:** 2171917

Percent Solids for Sample: 0.00 **Spiked ID:** 2067368004S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0056		0.0005	U	0.0050	112.00		CV

7470A

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067368004 **Client ID:** MRC-MW-105A-042715SD **LIMS ID:** 2171918

Percent Solids for Sample: 0.00 **Spiked ID:** 2067368004SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0054		0.0005	U	0.0050	108.00		CV

7470A

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067368004S **Client ID:** MRC-MW-105A-042715SD **LIMS ID:** 2171918

Percent Solids for Sample: 0.00 **Duplicate ID:** 2067368004SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0056		0.0054		3.6		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171916									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-024

Contract: TMM024|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti**SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70515						
2171915	MB for HBN 70515 [MDIG/50632	MB	QC-WAT	5/4/15	25.0	25.0	
2171916	LCS for HBN 70515 [MDIG/50632	LCS	QC-WAT	5/4/15	25.0	25.0	
2067368004	MRC-MW-105A-042715	SAM	WATER	5/4/15	25.0	25.0	
2067368004S	MRC-MW-105A-042715S	MS	WATER	5/4/15	25.0	25.0	
2067368004SD	MRC-MW-105A-042715SD	MSD	WATER	5/4/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-024

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1324																X									
Standard #1 (0.2ppb	1.00	1325																X									
	1.00	1326																X									
	1.00	1327																X									
	1.00	1328																X									
	1.00	1329																X									
ICV1	1.00	1330																X									
ICB1	1.00	1331																X									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-024

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1402																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1404																								
ZZZZZZ	1.00	1405																								
ZZZZZZ	1.00	1406																								
ZZZZZZ	1.00	1407																								
ZZZZZZ	1.00	1408																								
ZZZZZZ	1.00	1410																								
ZZZZZZ	1.00	1411																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1413																								
ZZZZZZ	1.00	1414																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1416																								
ZZZZZZ	1.00	1417																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1420																								
CCV4	1.00	1421																X								
CCB4	1.00	1423																X								
ZZZZZZ	1.00	1424																								
ZZZZZZ	1.00	1425																								
ZZZZZZ	1.00	1426																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1430																								
2171915	1.00	1431																X								
2171916	1.00	1432																X								
ZZZZZZ	1.00	1433																								
CCV5	1.00	1435																X								
CCB5	1.00	1436																X								
ZZZZZZ	1.00	1437																								
2067368004	1.00	1438																X								
2067368004S	1.00	1439																X								
2067368004SD	1.00	1440																X								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM024|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-024

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1442																										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1446																										
ZZZZZZ	1.00	1447																										
CCV6	1.00	1448																X										
CCB6	1.00	1449																X										
ZZZZZZ	1.00	1450																										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1454																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1515																										
ZZZZZZ	1.00	1516																										

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511952

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1565 (HBN: 148273)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 445605
Analyzed: 05/06/2015 15:00
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 445606
Analyzed: 05/06/2015 15:19
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.12	5.00	102	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1511952001	**MS:** 445607	**MSD:** 445608
Analyzed: 05/06/2015 15:38	**Analyzed:** 05/06/2015 15:57	**Analyzed:** 05/06/2015 16:16
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.170	5.41	5	108	85.3	112.8	5.37	107	0.809	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1511952

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1565 (HBN: 148273)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV: 445601				**CCV:** 445609		
Analyzed: 05/06/2015 13:40				**Analyzed:** 05/06/2015 17:13		
Units: ug/L				**Units:** ug/L		
Criteria: ± 15%				**Criteria:** ± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	26.2	25.0	105	26.0	25.0	104

Interference Check Sample

ICSA: 445604			
Analyzed: 05/06/2015 14:41			
Units: ug/L			
Criteria: ± 30%			
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.12	1.00	112

Limit of Detection Verification

LODV: 445603				**LODV:** 445610		
Analyzed: 05/06/2015 14:22				**Analyzed:** 05/06/2015 17:32		
Units: ug/L				**Units:** ug/L		
Criteria: ± 50%				**Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.0949	0.100	94.9	0.101	0.100	101

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	5/11/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

LOCKHEED-MRC
WATER DATA
2067368R

FRACTION	CHEMICAL	MRC-MW-113A-042715	UNITS	MRC-MW-DUP03-042715	RPD	D
MISC	PERCHLORATE	0.17 J	UG/L	0.14 J	19.35	0.03
OS	1,4-DIOXANE	5.4	UG/L	5.6	3.64	0.20
OV	1,1-DICHLOROETHANE	1.8	UG/L	1.6	11.76	0.20
OV	1,1-DICHLOROETHENE	0.36 J	UG/L	0.3 J	18.18	0.06
OV	1,2,3-TRICHLOROBENZENE	43	UG/L	43.3	0.70	0.30
OV	1,2-DICHLOROBENZENE	13.8	UG/L	13.5	2.20	0.30
OV	1,2-DICHLOROETHANE	1.2	UG/L	1.1	8.70	0.10
OV	1,3-DICHLOROBENZENE	17.5	UG/L	17.4	0.57	0.10
OV	1,4-DICHLOROBENZENE	37.7	UG/L	37.5	0.53	0.20
OV	BENZENE	0.48 J	UG/L	0.46 J	4.26	0.02
OV	CARBON TETRACHLORIDE	0.95 J	UG/L	0.86 J	9.94	0.09
OV	CHLOROBENZENE	33	UG/L	32.1	2.76	0.90
OV	CHLOROFORM	1.1	UG/L	0.97 J	12.56	0.13
OV	CIS-1,2-DICHLOROETHENE	9.5	UG/L	8.4	12.29	1.10
OV	TETRACHLOROETHENE	45.7	UG/L	44.8	1.99	0.90
OV	TRANS-1,2-DICHLOROETHENE	0.38 J	UG/L	0.36 J	5.41	0.02
OV	TRICHLOROETHENE	23.5	UG/L	22.1	6.14	1.40
OV	VINYL CHLORIDE	0.34 J	UG/L	ND	**200.00**	0.34
PCB	MONOCHLOROBIPHENYLS	ND	UG/L	0.011	**200.00**	0.01

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

LOCKHEED-MRC
WATER DATA
2067368R

FRACTION	CHEMICAL	MRC-MW-113A-042715-DL	UNITS	RC-MW-DUP03-042715-I	RPD	D
OV	1,2,4-TRICHLOROBENZENE	131	UG/L	133	1.52	2.00
OV	TRICHLOROFLUOROMETHANE	1010	UG/L	961	4.97	49.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **JUNE 9, 2015**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION – VOC / TOTAL METALS**
LOCKHEED – MIDDLE RIVER CENTER (MRC)
SAMPLE DELIVERY GROUP (SDG) – 2067593R

SAMPLES: 4/Water/ VOC

MRC-MW-104A-042815 MRC-MW-104B-042815 MRC-MW-112A-042815
TB-042815

2/Water/ TOTAL METALS

MRC-MW-104B-042815 MRC-MW-112A-042815

Overview

The sample set for Lockheed MRC, SDG 2067593R consisted of three (3) water samples and one (1) trip blank. The samples were analyzed for volatile organic compounds (VOC) and total metals as outlined above.

The samples were collected by Tetra Tech on April 28, 2015 and analyzed by Test America Laboratories, Inc. All analyses were conducted in accordance with SW-846 Methods 8260C, 6010C, 6020A, and 7470A analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method blank results, surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), internal standard recoveries, ICP interference results, laboratory duplicate results, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- No major noncompliances were noted.

Minor

- The following contaminant was detected in the trip blank (TB-042815) at the following maximum concentration:

Analyte	Maximum Concentration	Action Level
Bromomethane	0.58 ug/L	2.9 ug/L

An action level of 5X the maximum contaminant level for bromomethane was used as the minimum detectable concentration. Dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The detected results for bromomethane less than the action limit were qualified (U) due to blank contamination.

- A VOC continuing calibration percent difference (%D) was greater than the quality control limit of 20% for 2-butanone for instrument MS15 on 04/30/15 @01:48. The nondetected results for 2-butanone in all samples were qualified as estimated (UJ).

- The following contaminants were detected in the laboratory calibration blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Molybdenum	0.0008 mg/L	0.004 mg/L
Iron	0.025 mg/L	0.125 mg/L

An action level of 5X the maximum contaminant level for molybdenum and iron were used as the minimum detectable concentrations. Dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The detected results for molybdenum and iron less than the action limit were qualified (U) due to blank contamination for sample MRC-MW-104B-042815.

- Positive results below the Reporting Limit (RL) and above the detection limit were qualified as estimated, (J), due to uncertainty near the detection limit.

Notes

The preparation blanks for VOCs and metals parameters were reported to the reporting limit not the MDL. No action was taken on this basis.

Nondetected results were reported to the method detection limit (MDL).

Executive Summary

Laboratory Performance: Blank contamination resulted in the qualification of bromomethane, molybdenum, and iron data. Continuing calibration %D noncompliance resulted in the qualification of 2-butanone data.

Other Factors Affecting Data Quality: Positive results below the Reporting Limit (RL) and above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those issues affecting data quality.

Tetra Tech
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-104A-042815			MRC-MW-104B-042815			MRC-MW-112A-042815			TB-042815		
SDG: 2067593R	LAB_ID	2067593002			2067593003			2067593004			2067593001		
FRACTION: OV	SAMP_DATE	4/28/2015			4/28/2015			4/28/2015			4/28/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.36	J	P	0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	U		58.9	U	
2-BUTANONE		1.8	UJ	C	1.8	UJ	C	1.8	UJ	C	1.8	UJ	C
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.31	J	P	0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.47	U	A	0.48	U	A	0.43	U	A	0.58	J	P
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		2.2			0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U		1.8			0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-104A-042815			MRC-MW-104B-042815			MRC-MW-112A-042815			TB-042815		
SDG: 2067593R	LAB_ID	2067593002			2067593003			2067593004			2067593001		
FRACTION: OV	SAMP_DATE	4/28/2015			4/28/2015			4/28/2015			4/28/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		0.33	U		2.5			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		1.3			0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-104B-042815			MRC-MW-112A-042815		
SDG: 2067593R	LAB_ID	2067593003			2067593004		
FRACTION: M	SAMP_DATE	4/28/2015			4/28/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U	
ARSENIC		0.0016	J	P	0.001	U	
BARIUM		0.058			0.12		
BERYLLIUM		0.0087			0.0091		
CADMIUM		0.00049	J	P	0.00037	U	
CHROMIUM		0.00089	J	P	0.00092	J	P
COBALT		0.081			0.074		
COPPER		0.0084			0.0019	U	
IRON		0.092	U	A	10.8		
LEAD		0.00074	U		0.00074	U	
MANGANESE		0.53			0.28		
MERCURY		0.00017	U		0.00017	U	
MOLYBDENUM		0.00078	U	A	0.00074	U	
NICKEL		0.089			0.099		
SELENIUM		0.0056	J	P	0.0019	U	
SILVER		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U	
VANADIUM		0.00074	U		0.0017	J	P

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593001** Date Collected: 4/28/2015 00:00 Matrix: Water

Sample ID: **TB-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 03:42	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 03:42	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:42	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 03:42	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 03:42	JPA	A
Bromomethane	0.58J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 03:42	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 03:42	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 03:42	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:42	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 03:42	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 03:42	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 03:42	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:42	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:42	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 03:42	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 03:42	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 03:42	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 03:42	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 03:42	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 03:42	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:42	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:42	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 03:42	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 03:42	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 03:42	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 03:42	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 03:42	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 03:42	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 03:42	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 03:42	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 03:42	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 03:42	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 03:42	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 03:42	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593001** Date Collected: 4/28/2015 00:00 Matrix: Water

Sample ID: **TB-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/30/15 03:42	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 03:42	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 03:42	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 03:42	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/30/15 03:42	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 03:42	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/30/15 03:42	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/30/15 03:42	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 03:42	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 03:42	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 03:42	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 03:42	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/30/15 03:42	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260C		4/30/15 03:42	JPA	A
4-Bromofluorobenzene (S)	96		%	79 - 114	SW846 8260C		4/30/15 03:42	JPA	A
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260C		4/30/15 03:42	JPA	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C		4/30/15 03:42	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593002** Date Collected: 4/28/2015 12:04 Matrix: Water

Sample ID: **MRC-MW-104A-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 09:07	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:07	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:07	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 09:07	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 09:07	JPA	A
Bromomethane	0.47J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 09:07	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 09:07	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:07	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:07	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 09:07	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 09:07	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 09:07	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:07	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:07	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 09:07	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:07	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 09:07	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 09:07	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 09:07	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:07	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:07	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:07	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:07	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:07	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 09:07	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:07	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:07	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 09:07	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 09:07	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:07	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 09:07	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 09:07	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 09:07	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 09:07	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593002** Date Collected: 4/28/2015 12:04 Matrix: Water

Sample ID: **MRC-MW-104A-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		4/30/15 09:07	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 09:07	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 09:07	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 09:07	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		4/30/15 09:07	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:07	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		4/30/15 09:07	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		4/30/15 09:07	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 09:07	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 09:07	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 09:07	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:07	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		4/30/15 09:07	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260C		4/30/15 09:07	JPA	A
4-Bromofluorobenzene (S)	95.1		%	79 - 114	SW846 8260C		4/30/15 09:07	JPA	A
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260C		4/30/15 09:07	JPA	A
Toluene-d8 (S)	95.4		%	76 - 127	SW846 8260C		4/30/15 09:07	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593003** Date Collected: 4/28/2015 13:02 Matrix: Water

Sample ID: **MRC-MW-104B-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 09:24	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:24	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:24	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 09:24	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 09:24	JPA	A
Bromomethane	0.48J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 09:24	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 09:24	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:24	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:24	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		4/30/15 09:24	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 09:24	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:24	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 09:24	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:24	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:24	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 09:24	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:24	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 09:24	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 09:24	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 09:24	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:24	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:24	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:24	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:24	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:24	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:24	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 09:24	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:24	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:24	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 09:24	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 09:24	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:24	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 09:24	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 09:24	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 09:24	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 09:24	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593003** Date Collected: 4/28/2015 13:02 Matrix: Water

Sample ID: **MRC-MW-104B-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:24	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 09:24	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 09:24	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 09:24	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 09:24	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 09:24	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 09:24	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 09:24	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 09:24	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 09:24	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:24	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:24	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 09:24	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			4/30/15 09:24	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:24	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 09:24	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133		SW846 8260C			4/30/15 09:24	JPA	A
4-Bromofluorobenzene (S)	93.9		%	79 - 114		SW846 8260C			4/30/15 09:24	JPA	A
Dibromofluoromethane (S)	102		%	78 - 116		SW846 8260C			4/30/15 09:24	JPA	A
Toluene-d8 (S)	98.1		%	76 - 127		SW846 8260C			4/30/15 09:24	JPA	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Arsenic, Total	0.0016J	J	mg/L	0.0030	0.0010	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Barium, Total	0.058		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Beryllium, Total	0.0087		mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 15:16	MO	D2
Cadmium, Total	0.00049J	J	mg/L	0.0011	0.00037	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Chromium, Total	0.00089J	J	mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Cobalt, Total	0.081		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Copper, Total	0.0084		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Iron, Total	0.092		mg/L	0.067	0.022	SW846 6010C	4/29/15	AAM	4/29/15 13:17	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Manganese, Total	0.53		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/4/15	MNP	5/4/15 14:46	MNP	D3
Molybdenum, Total	0.00078J	J	mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Nickel, Total	0.089		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593003** Date Collected: 4/28/2015 13:02 Matrix: Water

Sample ID: **MRC-MW-104B-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	0.0056J	J	mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:11	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593004** Date Collected: 4/28/2015 14:53 Matrix: Water

Sample ID: **MRC-MW-112A-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		4/30/15 09:41	JPA	A
Benzene	0.31J	J	ug/L	1.0	0.23	SW846 8260C		4/30/15 09:41	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:41	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		4/30/15 09:41	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		4/30/15 09:41	JPA	A
Bromomethane	0.43J	J	ug/L	1.0	0.39	SW846 8260C		4/30/15 09:41	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		4/30/15 09:41	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		4/30/15 09:41	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:41	JPA	A
Chlorobenzene	2.2		ug/L	1.0	0.19	SW846 8260C		4/30/15 09:41	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		4/30/15 09:41	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:41	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		4/30/15 09:41	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:41	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:41	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		4/30/15 09:41	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:41	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		4/30/15 09:41	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		4/30/15 09:41	JPA	A
1,4-Dichlorobenzene	0.36J	J	ug/L	1.0	0.27	SW846 8260C		4/30/15 09:41	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		4/30/15 09:41	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		4/30/15 09:41	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:41	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:41	JPA	A
cis-1,2-Dichloroethene	1.8		ug/L	1.0	0.32	SW846 8260C		4/30/15 09:41	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:41	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		4/30/15 09:41	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		4/30/15 09:41	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		4/30/15 09:41	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		4/30/15 09:41	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		4/30/15 09:41	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		4/30/15 09:41	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		4/30/15 09:41	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		4/30/15 09:41	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		4/30/15 09:41	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		4/30/15 09:41	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593004** Date Collected: 4/28/2015 14:53 Matrix: Water

Sample ID: **MRC-MW-112A-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:41	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			4/30/15 09:41	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			4/30/15 09:41	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 09:41	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			4/30/15 09:41	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			4/30/15 09:41	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			4/30/15 09:41	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			4/30/15 09:41	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			4/30/15 09:41	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			4/30/15 09:41	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:41	JPA	A
Trichloroethene	2.5		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:41	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			4/30/15 09:41	JPA	A
Vinyl Chloride	1.3		ug/L	1.0	0.30	SW846 8260C			4/30/15 09:41	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			4/30/15 09:41	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			4/30/15 09:41	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	115		%	62 - 133	SW846 8260C			4/30/15 09:41	JPA	A
4-Bromofluorobenzene (S)	93		%	79 - 114	SW846 8260C			4/30/15 09:41	JPA	A
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260C			4/30/15 09:41	JPA	A
Toluene-d8 (S)	94.7		%	76 - 127	SW846 8260C			4/30/15 09:41	JPA	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Barium, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Beryllium, Total	0.0091		mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 15:20	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Chromium, Total	0.00092J	J	mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Cobalt, Total	0.074		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Iron, Total	10.8		mg/L	0.067	0.022	SW846 6010C	4/29/15	AAM	4/29/15 13:14	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Manganese, Total	0.28		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/4/15	MNP	5/4/15 14:47	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Nickel, Total	0.099		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2

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ANALYTICAL RESULTS

Workorder: 2067593 TMM025|112IC06247

Lab ID: **2067593004** Date Collected: 4/28/2015 14:53 Matrix: Water

Sample ID: **MRC-MW-112A-042815** Date Received: 4/28/2015 20:12

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2
Vanadium, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:15	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

APPENDIX C

SUPPORT DOCUMENTATION

SDG 2067593R

SAMPLE ID MRC-MW-112A-042815

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST /	IS AMOUNT (NG)	Final Volume (ML)	AVE RRF	CONCENTRATION ug/L
576597	1	15789	30	5	0.4641	1.77
				Sample Volume (ML)		
				5		

Cis-1,2-dichloroethene = 1.8 ug/L

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150430.b\15043029
Lab Smp Id: 2067593004 Client Smp ID: MRC-MW-112A-042815
Inj Date : 30-APR-2015 09:41
Operator : JPA Inst ID: ms15.i
Smp Info : 2067593004;;1;;;;;
Misc Info : ZZ VOMS 35744 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150430.b\15-8260b
Meth Date : 30-Apr-2015 13:53 joshua Quant Type: ISTD
Cal Date : 29-APR-2015 01:57 Cal File: 15042859.D
Als bottle: 28
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	1.455	1.455	(0.372)	11056	1.34898	1.34898	
4 Bromomethane	94	1.673	1.667	(0.428)	1654	0.43287	0.432869(a)	
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	Compound Not Detected.						
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	Compound Not Detected.						
10 1,1-Dichloroethene	61	Compound Not Detected.						
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	Compound Not Detected.						
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.195	3.201	(0.817)	15789	1.77018	1.77018	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	187585	31.6390	31.6390	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	3.681	3.681	(0.941)	8435	0.30781	0.307808(aH)	
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	232490	34.3964	34.3964	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	576597	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	17649	2.46176	2.46176	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.859	4.859	(0.822)	559768	28.3974	28.3974	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

PROJECT TITLE:
Tetra Tech
MRC-GW 2015 Sampling

Data Deliverable Group TMM-025
ALS#2067593

CLP-Like
DATA PACKAGE

SAMPLES COLLECTED
April 28, 2015

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-025

Sample Management

This report contains the results of the analysis of four (4) ground water samples collected on April 28, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 28, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Four (4) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

Total Metals by SW-846 Method 6020A

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following;

- Mo had detectible levels in the CCBs analyzed at 11:39 and 13:36 at 0.0008 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Two (2) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3a represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Three (3) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

DJM

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER No. 128488 | PA

2067593

PROJECT NO: 112IC06247	FACILITY: MAC-GW 2015	PROJECT MANAGER Tony Apanavage	PHONE NUMBER 301 528-3021	LABORATORY NAME AND AL
SAMPLERS (SIGNATURE) Walt Pa		FIELD OPERATIONS LEADER Walt Payon	PHONE NUMBER 301 991-3914	ADDRESS
		CARRIER/WAYBILL NUMBER		CITY, STATE

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCl HNO3
TYPE OF ANALYSIS: VOCs | Total metals

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs	Total metals	COMMENTS
4-28	—	TB-042815	TB	—	—	QC	G	3	X		
↓	1204	MAC-MW-104A-042815	MW 104A	—	—	GW	↓	3	X		
	1302	MAC-MW-104B-042815	MW 104B	—	—	↓	↓	4	X	X	
↓	1453	MAC-MW-112A-042815	MW 112A	—	—	↓	↓	4	X	X	

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?	✓		

Cooler Temp: 1 °C
Cooler #:
Therm ID: 291
Ship Carrier: FedEx UPS DHL
Tracking #:

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Walt Pa	4-28-15	1535	1. RECEIVED BY	4/28	1535
2. RELINQUISHED BY	4/28	2012	2. RECEIVED BY SFS	4/28	2012
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

LMG 04/29/15 0331

4/02R
FORM NO. TtNUS-001

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

May 4, 2015

Ms. Amy Thomson
Tetra Tech, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Certificate of Analysis

Project Name:	**GW sampling**	Workorder:	**2067593**
Purchase Order:	**1103811**	Workorder ID:	**TMM025|112IC06247**

Dear Ms. Thomson:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, April 28, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Samantha Brenner , Mr. Tony Apanavage

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2067593 TMM025|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2067593001	TB-042815	Water	4/28/2015 00:00	4/28/2015 20:12	Collected by Client
2067593002	MRC-MW-104A-042815	Water	4/28/2015 12:04	4/28/2015 20:12	Collected by Client
2067593003	MRC-MW-104B-042815	Water	4/28/2015 13:02	4/28/2015 20:12	Collected by Client
2067593004	MRC-MW-112A-042815	Water	4/28/2015 14:53	4/28/2015 20:12	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

Volatile Organics by 8260C Summary Forms

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2170933

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-025

Lab File ID: 15043005.D Lab Sample ID: 2170933

Date Analyzed: 4/30/2015 Time Analyzed: 02:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2170934(LCS)	2170934	15043006.D	03:08
TB-042815	2067593001	15043008.D	03:42
MRC-MW-104A-042815	2067593002	15043027.D	09:07
MRC-MW-104B-042815	2067593003	15043028.D	09:24
MRC-MW-112A-042815	2067593004	15043029.D	09:41

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2170933(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Matrix (soil/water): WATER Lab Sample ID: 2170933

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15043005.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 4/30/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.9	99.9	(40-151)
Benzene	20.0		19.2	96.2	(80-124)
Bromochloromethane	20.0		19.1	95.7	(73-117)
Bromodichloromethane	20.0		18.4	92	(79-126)
Bromoform	20.0		16.1	80.6	(70-123)
Bromomethane	20.0		23.0	115	(45-148)
2-Butanone	100		88.2	88.2	(50-152)
Carbon Disulfide	20.0		16.2	81.1	(57-131)
Carbon Tetrachloride	20.0		18.9	94.3	(62-132)
Chlorobenzene	20.0		18.1	90.4	(85-117)
Chlorodibromomethane	20.0		17.1	85.6	(77-122)
Chloroethane	20.0		18.8	94.2	(51-142)
Chloroform	20.0		19.9	99.7	(78-122)
Chloromethane	20.0		23.4	117	(38-156)
Cyclohexane	20.0		19.9	99.3	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.2	81.2	(59-133)
1,2-Dibromoethane	20.0		17.4	87.1	(80-124)
1,2-Dichlorobenzene	20.0		18.1	90.5	(82-118)
1,3-Dichlorobenzene	20.0		19.0	95	(81-118)
1,4-Dichlorobenzene	20.0		18.6	92.9	(81-116)
Dichlorodifluoromethane	20.0		20.0	99.9	(17-166)
1,1-Dichloroethane	20.0		19.8	99	(78-124)
1,2-Dichloroethane	20.0		19.8	99.1	(70-133)
1,1-Dichloroethene	20.0		18.8	94.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.3	91.5	(78-125)
trans-1,2-Dichloroethen	20.0		20.6	103	(71-122)
1,2-Dichloropropane	20.0		18.8	94	(81-127)
cis-1,3-Dichloropropene	20.0		16.6	83.1	(81-121)
trans-1,3-Dichloroprope	20.0		17.1	85.7	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Laboratory Control Spike - Sample No: 2170934

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		390	78	(1-280)
Ethylbenzene	20.0		17.8	89.2	(80-124)
Freon 113	20.0		19.5	97.5	(50-130)
2-Hexanone	100		79.9	79.9	(65-154)
Isopropylbenzene	20.0		16.1	80.4	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.2	90.9	(70-130)
Methyl t-Butyl Ether	20.0		17.5	87.7	(69-115)
4-Methyl-2-Pentanone(MI	100		81.9	81.9	(71-146)
Methylene Chloride	20.0		20.6	103	(76-121)
Styrene	20.0		17.0	85	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.9	94.5	(74-135)
Tetrachloroethene	20.0		19.3	96.3	(72-124)
Toluene	20.0		18.3	91.4	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.9	69.5	(67-123)
1,1,1-Trichloroethane	20.0		18.9	94.3	(66-130)
1,1,2-Trichloroethane	20.0		19.1	95.7	(82-126)
Trichloroethene	20.0		19.3	96.7	(77-124)
Trichlorofluoromethane	20.0		19.4	96.8	(38-123)
Vinyl Chloride	20.0		19.0	94.8	(27-138)
o-Xylene	20.0		16.1	80.4	(79-124)
mp-Xylene	40.0		34.7	86.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-025

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2170307(LCS)	96.5	94.4	94.2	91.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-025

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2170933(MB)	89.5	101	106	97.2	0
03	2170934(LCS)	90.2	93.0	94.1	87.5	0
04	TB-042815	96.0	100	107	102	0
05	MRC-MW-104A-042815	95.1	102	112	95.4	0
06	MRC-MW-104B-042815	93.9	102	109	98.1	0
07	MRC-MW-112A-042815	93.0	105	115	94.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-025

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-025

Lab File ID: 15043000.D BFB Injection Date: 4/30/2015

Instrument ID: ms15.i BFB Injection Time: 01:09

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	81.0
175	5.0 - 9.0% of mass 174	5.8 (7.2) 1
176	95.0 - 101.0% of mass 174	79.5 (98.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.3) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15043002.D	4/30/2015	01:48
2170933(MB)	2170933	15043005.D	4/30/2015	02:50
2170934(LCS)	2170934	15043006.D	4/30/2015	03:08
TB-042815	2067593001	15043008.D	4/30/2015	03:42
MRC-MW-104A-042815	2067593002	15043027.D	4/30/2015	09:07
MRC-MW-104B-042815	2067593003	15043028.D	4/30/2015	09:24
MRC-MW-112A-042815	2067593004	15043029.D	4/30/2015	09:41

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.2	100.0	Q
Acrolein	0.0581	0.0524			-9.9	100.0	A
Acrylonitrile	0.1086	0.1034			-4.8	100.0	A
Acetonitrile	250		247		-1.1	100.0	Q
tert-Amyl Ethylether	50.0000		43.2377		-13.5	100.0	Q
tert-Amyl methyl ether	50.0000		43.0118		-14.0	100.0	Q
tert-Amyl Alcohol	250		207		-17.3	100.0	Q
Benzene	1.4258	1.3455			-5.6	100.0	A
Benzyl Chloride	50.0000		38.9773		-22.0	100.0	Q
Bromobenzene	0.9609	0.9127			-5.0	100.0	A
Bromochloromethane	50.0000		48.8843		-2.2	100.0	Q
Bromodichloromethane	0.4399	0.4168			-5.3	100.0	A
Bromoform	50.0000		41.9449	0.100	-16.1	100.0	Q
Bromomethane	50.0000		59.3716		18.7	100.0	Q
2-Butanone	250		195		-22.0	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0221			-13.3	100.0	A
tert-Butylbenzene	50.0000		45.1641		-9.7	100.0	Q
n-Butylbenzene	50.0000		44.1110		-11.8	100.0	Q
sec-Butylbenzene	50.0000		45.2798		-9.4	100.0	Q
Carbon Disulfide	50.0000		46.4227		-7.2	100.0	Q
Carbon Tetrachloride	0.4297	0.4103			-4.5	100.0	A
Chloroacetonitrile	250		212		-15.1	100.0	Q
Chlorobenzene	2.3877	2.0948		0.300	-12.3	100.0	A
1-Chlorobutane	50.0000		47.2735		-5.5	100.0	Q
Chlorodibromomethane	50.0000		43.8207		-12.4	100.0	Q
Chloroethane	50.0000		50.8149		1.6	100.0	Q
2-Chloroethylvinyl ether	50.0000		36.5947		-26.8	100.0	Q
Chloroform	50.0000		49.5065		-1.0	20.0	Q
1-Chlorohexane	50.0000		43.5800		-12.8	100.0	Q
Chloromethane	50.0000		54.8450	0.100	9.7	100.0	Q
Chloroprene	0.4876	0.4827			-1.0	100.0	A
3-Chloro-1-propene	50.0000		45.8975		-8.2	100.0	Q
o-Chlorotoluene	50.0000		45.5015		-9.0	100.0	Q
p-Chlorotoluene	50.0000		45.2425		-9.5	100.0	Q
Cyclohexane	0.4544	0.4665			2.7	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.5241		-17.0	100.0	Q
1,2-Dibromoethane	0.6562	0.5552			-15.4	100.0	A
Dibromomethane	0.2114	0.1903			-10.0	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.1969			-13.7	100.0	A
1,2-Dichlorobenzene	1.7893	1.6318			-8.8	100.0	A
1,3-Dichlorobenzene	1.8566	1.7159			-7.6	100.0	A
1,4-Dichlorobenzene	1.9931	1.7805			-10.7	100.0	A
Dichlorodifluoromethane	50.0000		52.9865		6.0	100.0	Q
1,1-Dichloroethane	50.0000		50.7649	0.100	1.5	100.0	Q
1,2-Dichloroethene, Total	100		96.7581		-3.2	100.0	Q
1,2-Dichloroethane	50.0000		47.6995		-4.6	100.0	Q
1,1-Dichloroethene	50.0000		48.6981		-2.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.4385			-5.5	100.0	A
trans-1,2-Dichloroethene	50.0000		49.5179		-1.0	100.0	Q
Dichlorofluoromethane	50.0000		48.7129		-2.6	100.0	Q
1,1-Dichloro-2-Propanone	250		214		-14.2	100.0	Q
2,2-Dichloropropane	0.3930	0.3391			-13.7	100.0	A
1,3-Dichloropropane	50.0000		44.5618		-10.9	100.0	Q
1,2-Dichloropropane	0.3530	0.3317			-6.0	20.0	A
1,1-Dichloropropene	0.4527	0.4426			-2.2	100.0	A
cis-1,3-Dichloropropene	50.0000		42.8517		-14.3	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.3453		-13.3	100.0	Q
1,3-Dichloropropene, Total	100		86.1970		-13.8	100.0	Q
Diisobutylene	50.0000		45.7096		-8.6	100.0	Q
Diisopropyl ether	50.0000		48.8422		-2.3	100.0	Q
1,4-Dioxane	1250		1047		-16.3	100.0	Q
Ethyl Acetate	0.2675	0.2401			-10.2	100.0	A
Ethyl ether	50.0000		46.3510		-7.3	100.0	Q
Ethyl Methacrylate	50.0000		41.4696		-17.1	100.0	Q
Ethyl tert-butyl ether	0.8344	0.7905			-5.3	100.0	A
Ethylbenzene	50.0000		45.7960		-8.4	20.0	Q
Freon 113	50.0000		47.7930		-4.4	100.0	Q
Heptane	50.0000		41.9493		-16.1	100.0	Q
Hexachlorobutadiene	50.0000		43.6456		-12.7	100.0	Q
Hexachloroethane	50.0000		44.2898		-11.4	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		46.3563		-7.3	100.0	Q
2-Hexanone	250		210		-16.1	100.0	Q
Iodomethane	50.0000		64.6925		29.4	100.0	Q
Isobutyl alcohol	500		416		-16.8	100.0	Q
Isopropyl Alcohol	250		227		-9.3	100.0	Q
Isopropylbenzene	50.0000		44.5488		-10.9	100.0	Q
p-Isopropyltoluene	50.0000		44.3574		-11.3	100.0	Q
Methyl acetate	50.0000		47.9380		-4.1	100.0	Q
Methyl acrylate	0.2529	0.2324			-8.1	100.0	A
Methacrylonitrile	50.0000		46.5053		-7.0	100.0	Q
Methyl cyclohexane	1.1020	1.0155			-7.8	100.0	A
Methyl methacrylate	50.0000		42.5022		-15.0	100.0	Q
Methyl t-Butyl Ether	0.8449	0.7340			-13.1	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		214		-14.3	100.0	Q
Methylene Chloride	50.0000		50.9288		1.9	100.0	Q
Naphthalene	50.0000		38.4048		-23.2	100.0	Q
Nitrobenzene	500		372		-25.7	100.0	Q
2-Nitropropane	250		225		-10.0	100.0	Q
Octane	50.0000		39.9334		-20.1	100.0	Q
Pentachloroethane	0.6997	0.6337			-9.4	100.0	A
Pentane	50.0000		45.4640		-9.1	100.0	Q
n-Propanol	500		515		3.1	100.0	Q
Propionitrile	0.0436	0.0401			-8.0	100.0	A
n-Propylbenzene	50.0000		45.6385		-8.7	100.0	Q
Styrene	50.0000		45.0324		-9.9	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6929			-14.0	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.2088	0.300	-11.6	100.0	Q
Tetrachloroethene	50.0000		46.5844		-6.8	100.0	Q
Tetrahydrofuran	250		219		-12.2	100.0	Q
Toluene	50.0000		45.2579		-9.5	20.0	Q
Total Xylenes	150		134		-10.9	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.5426		-16.9	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.4271		-19.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4758			-7.7	100.0	A
1,1,2-Trichloroethane	50.0000		45.5646		-8.9	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-025

Instrument ID: ms15.i Calibration Date/Time: 4/30/2015 01:48

Lab File ID: 15043002.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		47.0150		-6.0	100.0	Q
Trichlorofluoromethane	50.0000		50.1777		0.4	100.0	Q
1,2,3-Trichloropropane	50.0000		44.2524		-11.5	100.0	Q
1,2,4-Trimethylbenzene	50.0000		45.2673		-9.5	100.0	Q
1,3,5-Trimethylbenzene	50.0000		45.7632		-8.5	100.0	Q
Vinyl Acetate	50.0000		46.1661		-7.7	100.0	Q
Vinyl Chloride	50.0000		49.0546		-1.9	20.0	Q
o-Xylene	50.0000		42.7290		-14.5	100.0	L
mp-Xylene	100		90.9349		-9.1	100.0	Q
4-Bromofluorobenzene	50.0000		47.6456		-4.7	100.0	Q
Dibromofluoromethane	50.0000		49.2453		-1.5	100.0	Q
1,2-Dichloroethane-d4	50.0000		48.2810		-3.4	100.0	Q
Toluene-d8	2.4192	2.2464			-7.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-025

Lab File ID: 15043002.D Date Analyzed: 4/30/2015

Instrument ID: ms15.i Time Analyzed: 01:48

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	377428	5.913	347722	7.686	793589	3.910
UPPER LIMIT	754856	6.413	695444	8.186	1587178	4.410
LOWER LIMIT	188714	5.413	173861	7.186	396795	3.410
SAMPLE NO.						
1800	377428	5.913	347722	7.686	793589	3.910
2170933(MB)	241882	5.913	192305	7.686	624719	3.910
2170934(LCS)	356190	5.913	320195	7.686	761046	3.910
TB-042815	238006	5.913	182279	7.686	616879	3.910
MRC-MW-104A-04281	235763	5.912	178317	7.686	590808	3.910
MRC-MW-104B-04281	234691	5.912	178118	7.686	603399	3.910
MRC-MW-112A-04281	244444	5.912	189080	7.686	576597	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1005	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Arsenic	0.0990	0.1000	99		90 - 110	M	4/30/2015	09:25	B043015 09
	Barium	0.0982	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Cadmium	0.0978	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Chromium	0.0997	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Cobalt	0.0989	0.1000	99		90 - 110	M	4/30/2015	09:25	B043015 09
	Copper	0.1002	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Lead	0.0953	0.1000	95		90 - 110	M	4/30/2015	09:25	B043015 09
	Manganese	0.1001	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Molybdenum	0.0970	0.1000	97		90 - 110	M	4/30/2015	09:25	B043015 09
	Nickel	0.0980	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Selenium	0.0971	0.1000	97		90 - 110	M	4/30/2015	09:25	B043015 09
	Silver	0.0980	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Thallium	0.0960	0.1000	96		90 - 110	M	4/30/2015	09:25	B043015 09
	Vanadium	0.1005	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	09:42	B043015 09
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/30/2015	09:42	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/30/2015	09:42	B043015 09
	Copper	0.0046	0.0050	92		70 - 130	M	4/30/2015	09:42	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Manganese	0.0047	0.0050	94		70 - 130	M	4/30/2015	09:42	B043015 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Nickel	0.0049	0.0050	98		70 - 130	M	4/30/2015	09:42	B043015 09
	Selenium	0.0052	0.0050	104		70 - 130	M	4/30/2015	09:42	B043015 09
	Silver	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	09:42	B043015 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1009	0.1000	101		90 - 110	M	4/30/2015	11:36	B043015 09
	Arsenic	0.1018	0.1000	102		90 - 110	M	4/30/2015	11:36	B043015 09
	Barium	0.0963	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Cadmium	0.0954	0.1000	95		90 - 110	M	4/30/2015	11:36	B043015 09
	Chromium	0.1000	0.1000	100		90 - 110	M	4/30/2015	11:36	B043015 09
	Cobalt	0.0983	0.1000	98		90 - 110	M	4/30/2015	11:36	B043015 09
	Copper	0.0998	0.1000	100		90 - 110	M	4/30/2015	11:36	B043015 09
	Lead	0.0948	0.1000	95		90 - 110	M	4/30/2015	11:36	B043015 09
	Manganese	0.0990	0.1000	99		90 - 110	M	4/30/2015	11:36	B043015 09
	Molybdenum	0.0941	0.1000	94		90 - 110	M	4/30/2015	11:36	B043015 09
	Nickel	0.0972	0.1000	97		90 - 110	M	4/30/2015	11:36	B043015 09
	Selenium	0.0984	0.1000	98		90 - 110	M	4/30/2015	11:36	B043015 09
	Silver	0.0957	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Thallium	0.0956	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Vanadium	0.1006	0.1000	101		90 - 110	M	4/30/2015	11:36	B043015 09
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	11:43	B043015 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/30/2015	11:43	B043015 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/30/2015	11:43	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	11:43	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/30/2015	11:43	B043015 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/30/2015	11:43	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Manganese	0.0048	0.0050	96		70 - 130	M	4/30/2015	11:43	B043015 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/30/2015	11:43	B043015 09
	Nickel	0.0051	0.0050	102		70 - 130	M	4/30/2015	11:43	B043015 09
	Selenium	0.0049	0.0050	98		70 - 130	M	4/30/2015	11:43	B043015 09
	Silver	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	11:43	B043015 09

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
	Arsenic	0.0033	0.0030	110		70 - 130	M	4/30/2015	13:40	B043015 09
	Barium	0.0052	0.0050	104		70 - 130	M	4/30/2015	13:40	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	13:40	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/30/2015	13:40	B043015 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/30/2015	13:40	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Manganese	0.0048	0.0050	96		70 - 130	M	4/30/2015	13:40	B043015 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/30/2015	13:40	B043015 09
	Nickel	0.0051	0.0050	102		70 - 130	M	4/30/2015	13:40	B043015 09
	Selenium	0.0044	0.0050	88		70 - 130	M	4/30/2015	13:40	B043015 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
CCV										
	Antimony	0.1007	0.1000	101		90 - 110	M	4/30/2015	13:44	B043015 09
	Arsenic	0.0997	0.1000	100		90 - 110	M	4/30/2015	13:44	B043015 09
	Barium	0.0986	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Cadmium	0.0978	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
	Chromium	0.0987	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Cobalt	0.0978	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
	Copper	0.0997	0.1000	100		90 - 110	M	4/30/2015	13:44	B043015 09
	Lead	0.0948	0.1000	95		90 - 110	M	4/30/2015	13:44	B043015 09
	Manganese	0.0990	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Molybdenum	0.0957	0.1000	96		90 - 110	M	4/30/2015	13:44	B043015 09
	Nickel	0.0972	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Selenium	0.0973	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Silver	0.0968	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/30/2015	13:44	B043015 09
	Vanadium	0.0981	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
ICV										
	Beryllium	0.0986	0.1000	99		90 - 110	M	4/30/2015	14:43	B043015A 1

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLICV										
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/30/2015	14:50	B043015A 1
CCV										
	Beryllium	0.0963	0.1000	96		90 - 110	M	4/30/2015	15:41	B043015A 1
LLCCV										
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/30/2015	15:48	B043015A 1

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	09:32	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	09:32	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	09:32	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	11:39	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	11:39	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	11:39	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	13:36	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	13:36	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	13:36	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
ICB										
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/30/2015	14:47	B043015A 141
CCB										
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/30/2015	15:45	B043015A 141

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171266			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/30/2015	13:04	B043015 0900 0
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/30/2015	15:09	B043015A 1415
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/30/2015	13:04	B043015 0900 0
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/30/2015	13:04	B043015 0900 0
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
	Arsenic	0.0002				-0.00300 - -0.00300	4/30/2015	09:45	B043015 0900 (
	Barium	0.0004				-0.01000 - -0.01000	4/30/2015	09:45	B043015 0900 (
	Cadmium	0.0012			*	-0.00100 - -0.00100	4/30/2015	09:45	B043015 0900 (
	Chromium	0.0006				-0.00400 - -0.00400	4/30/2015	09:45	B043015 0900 (
	Cobalt	0.0007				-0.00600 - -0.00600	4/30/2015	09:45	B043015 0900 (
	Copper	0.0016				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Lead	0.0001				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
	Manganese	0.0013				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Molybdenum	2.3574	2.00000	118		80 - 120%	4/30/2015	09:45	B043015 0900 (
	Nickel	0.0010				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Selenium	0.0000				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Silver	0.0005				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Thallium	0.00001				-0.001000 - -0.001000	4/30/2015	09:45	B043015 0900 (
	Vanadium	0.0002				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	4/30/2015	09:49	B043015 0900 (
	Arsenic	0.0216	0.02000	108		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Barium	0.0003				-0.00500 - -0.00500	4/30/2015	09:49	B043015 0900 (
	Cadmium	0.0107	0.01000	107		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Chromium	0.0186	0.02000	93		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Cobalt	0.0349	0.04000	87		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Copper	0.0184	0.02000	92		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Lead	0.0002				-0.00200 - -0.00200	4/30/2015	09:49	B043015 0900 (
	Manganese	0.0195	0.02000	98		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Molybdenum	2.2144	2.00000	111		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Nickel	0.0371	0.04000	93		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Selenium	0.0204	0.02000	102		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Silver	0.0185	0.02000	92		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Thallium	0.00001				-0.001000 - -0.001000	4/30/2015	09:49	B043015 0900 (
	Vanadium	0.0420	0.04000	105		80 - 120%	4/30/2015	09:49	B043015 0900 (
ICSA									
	Beryllium	0.00001				-0.001000 - -0.001000	4/30/2015	14:54	B043015A 14

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSAB									
	Beryllium	0.00000				-0.001000 - -0.001000	4/30/2015	14:58	B043015A 14

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171267									
	Antimony	mg/L	0.2220	0.2136		96		80 - 120	M
	Arsenic	mg/L	0.2220	0.2123		96		80 - 120	M
	Barium	mg/L	2.2220	2.3137		104		80 - 120	M
	Beryllium	mg/L	0.2220	0.2061		93		80 - 120	M
	Cadmium	mg/L	0.2220	0.2289		103		80 - 120	M
	Chromium	mg/L	0.2220	0.2116		95		80 - 120	M
	Cobalt	mg/L	0.2220	0.2090		94		80 - 120	M
	Copper	mg/L	0.2220	0.2072		93		80 - 120	M
	Lead	mg/L	0.2220	0.2181		98		80 - 120	M
	Manganese	mg/L	0.2220	0.2129		96		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2320		105		80 - 120	M
	Nickel	mg/L	0.2220	0.2106		95		80 - 120	M
	Selenium	mg/L	0.2220	0.1933		87		80 - 120	M
	Silver	mg/L	0.1110	0.1118		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2091		94		80 - 120	M
	Vanadium	mg/L	0.2220	0.2094		94		80 - 120	M

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SERIAL DILUTION SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Level:** LOW **Client ID:** MRC-MW-112A-042815L

Sample ID: **2067593004** **Serial Dilution ID:** **2067593004L**

Analyte	Initial Result mg/L	C	Serial Result mg/L	C	% Difference	Qual	Acceptance Limits	M
Antimony	0.0007	U	0.0007	U			10.00 %	M
Arsenic	0.0010	U	0.0010	U			10.00 %	M
Barium	0.1057		0.0992		6		10.00 %	M
Beryllium	0.008227		0.008015		3		10.00 %	M
Cadmium	0.0004	U	0.0004	U			10.00 %	M
Chromium	0.0008		0.0007	U	100.0		10.00 %	M
Cobalt	0.0666		0.0587		12		10.00 %	M
Copper	0.0019	U	0.0019	U			10.00 %	M
Lead	0.0007	U	0.0007	U			10.00 %	M
Manganese	0.2506		0.2463		2		10.00 %	M
Molybdenum	0.0007	U	0.0007	U			10.00 %	M
Nickel	0.0887		0.0865		2		10.00 %	M
Selenium	0.0019	U	0.0019	U			10.00 %	M
Silver	0.0007	U	0.0007	U			10.00 %	M
Thallium	0.0003	U	0.0003	U			10.00 %	M
Vanadium	0.0015		0.0007	U	100.0		10.00 %	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70297						
2171266	MB for HBN 70297 [MDIG/50615	MB	QC-WAT	4/30/15	45.0	50.0	
2171267	LCS for HBN 70297 [MDIG/50615	LCS	QC-WAT	4/30/15	45.0	50.0	
2067593003	MRC-MW-104B-042815	SAM	WATER	4/30/15	45.0	50.0	
2067593004	MRC-MW-112A-042815	SAM	WATER	4/30/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0900																										
BLK	1.00	0903			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0907			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0911			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0914			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0918			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0922			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0925			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0929																										
ICB2	1.00	0932			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0942			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0945			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0949			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1001																										
ZZZZZZ	1.00	1005																										
ZZZZZZ	1.00	1009																										
ZZZZZZ	1.00	1012																										
ZZZZZZ	1.00	1016																										
ZZZZZZ	5.00	1019																										
ZZZZZZ	5.00	1023																										
ZZZZZZ	5.00	1027																										
ZZZZZZ	1.00	1030																										
ZZZZZZ	1.00	1034																										
ZZZZZZ	1.00	1038																										
ZZZZZZ	1.00	1041																										
ZZZZZZ	1.00	1045																										
ZZZZZZ	1.00	1049																										
ZZZZZZ	1.00	1052																										
ZZZZZZ	1.00	1056																										
ZZZZZZ	1.00	1100																										
ZZZZZZ	1.00	1103																										
ZZZZZZ	1.00	1107																										
ZZZZZZ	1.00	1110																										
ZZZZZZ	1.00	1114																										
ZZZZZZ	1.00	1118																										
ZZZZZZ	1.00	1121																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1125																									
ZZZZZZ	1.00	1128																									
ZZZZZZ	1.00	1132																									
CCV3	1.00	1136			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	1139			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1143			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2171266	1.00	1304			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2171267	1.00	1307			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2067593003	1.00	1311			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2067593004	1.00	1315			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2067593004L	5.00	1318			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1326																									
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1333																									
CCB4	1.00	1336			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1340			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
CCV5	1.00	1344			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1412																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B043015A 141

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1418																										
BLK	1.00	1421						X																				
STANDARD 1	1.00	1425						X																				
STANDARD 2	1.00	1429						X																				
STANDARD 3	1.00	1432						X																				
STANDARD 4	1.00	1436						X																				
STANDARD 5	1.00	1440						X																				
ICV	1.00	1443						X																				
ICB1	1.00	1447						X																				
LLICV	1.00	1450						X																				
ICS-A1	1.00	1454						X																				
ICS-AB1	1.00	1458						X																				
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1505																										
2171266	1.00	1509						X																				
2171267	1.00	1512						X																				
2067593003	1.00	1516						X																				
2067593004	1.00	1520						X																				
2067593004L	5.00	1523						X																				
ZZZZZZ	1.00	1527																										
ZZZZZZ	1.00	1531																										
ZZZZZZ	1.00	1534																										
ZZZZZZ	5.00	1538																										
CCV1	1.00	1541						X																				
CCB1	1.00	1545						X																				
LLCCV	1.00	1548						X																				
ZZZZZZ	1.00	1552																										
ZZZZZZ	1.00	1556																										
ZZZZZZ	1.00	1600																										
ZZZZZZ	1.00	1603																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	09:00																									
BLK	1.00	09:03					X																				
STANDARD 1	1.00	09:07					X																				
STANDARD 2	1.00	09:11					X																				
STANDARD 3	1.00	09:14					X																				
STANDARD 4	1.00	09:18					X																				
STANDARD 5	1.00	09:22					X																				
ICV	1.00	09:25					X																				
ZZZZZZ	1.00	09:29																									
ICB2	1.00	09:32					X																				
LLICV	1.00	09:42					X																				
ICS-A1	1.00	09:45					X																				
ICS-AB1	1.00	09:49					X																				
ZZZZZZ	1.00	10:01																									
ZZZZZZ	1.00	10:05																									
ZZZZZZ	1.00	10:09																									
ZZZZZZ	1.00	10:12																									
ZZZZZZ	1.00	10:16																									
ZZZZZZ	5.00	10:19																									
ZZZZZZ	5.00	10:23																									
ZZZZZZ	5.00	10:27																									
ZZZZZZ	1.00	10:30																									
ZZZZZZ	1.00	10:34																									
ZZZZZZ	1.00	10:38																									
ZZZZZZ	1.00	10:41																									
ZZZZZZ	1.00	10:45																									
ZZZZZZ	1.00	10:49																									
ZZZZZZ	1.00	10:52																									
ZZZZZZ	1.00	10:56																									
ZZZZZZ	1.00	11:00																									
ZZZZZZ	1.00	11:03																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM025|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-025

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B043015 0900

Start Date: 4/30/2015 **End Date:** 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	11:07																									
ZZZZZZ	1.00	11:10																									
ZZZZZZ	1.00	11:14																									
ZZZZZZ	1.00	11:18																									
ZZZZZZ	1.00	11:21																									
ZZZZZZ	1.00	11:25																									
ZZZZZZ	1.00	11:28																									
ZZZZZZ	1.00	11:32																									
CCV3	1.00	11:36					X																				
CCB3	1.00	11:39					X																				
LLCCV	1.00	11:43					X																				
2171266	1.00	13:04					X																				
2171267	1.00	13:07					X																				
2067593003	1.00	13:11					X																				
2067593004	1.00	13:15					X																				
2067593004L	5.00	13:18					X																				
ZZZZZZ	1.00	13:22																									
ZZZZZZ	1.00	13:26																									
ZZZZZZ	1.00	13:29																									
ZZZZZZ	1.00	13:33																									
CCB4	1.00	13:36					X																				
LLCCV	1.00	13:40					X																				
CCV5	1.00	13:44					X																				
ZZZZZZ	1.00	13:49																									
ZZZZZZ	1.00	13:52																									
ZZZZZZ	1.00	13:58																									
ZZZZZZ	1.00	14:02																									
ZZZZZZ	1.00	14:05																									
ZZZZZZ	1.00	14:09																									
ZZZZZZ	1.00	14:12																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B043015A 141

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes
ZZZZZZ	1.00	14:18		
BLK	1.00	14:21		
STANDARD 1	1.00	14:25		
STANDARD 2	1.00	14:29		
STANDARD 3	1.00	14:32		
STANDARD 4	1.00	14:36		
STANDARD 5	1.00	14:40		
ICV	1.00	14:43		
ICB1	1.00	14:47		
LLICV	1.00	14:50		
ICS-A1	1.00	14:54		
ICS-AB1	1.00	14:58		
ZZZZZZ	1.00	15:01		
ZZZZZZ	1.00	15:05		
2171266	1.00	15:09		
2171267	1.00	15:12		
2067593003	1.00	15:16		
2067593004	1.00	15:20		
2067593004L	5.00	15:23		
ZZZZZZ	1.00	15:27		
ZZZZZZ	1.00	15:31		
ZZZZZZ	1.00	15:34		
ZZZZZZ	5.00	15:38		
CCV1	1.00	15:41		
CCB1	1.00	15:45		
LLCCV	1.00	15:48		
ZZZZZZ	1.00	15:52		
ZZZZZZ	1.00	15:56		
ZZZZZZ	1.00	16:00		
ZZZZZZ	1.00	16:03		

Analytes: B, AU, LI, MO, OS, PD, P, PT, SI, S, SN, SR, TI, U, W, IN, TE, ZR

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0900												
BLK	BLK	0903	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0907	101		102		101		100		100		99	
STANDARD 2	STANDARD 2	0911	101		95		100		99		101		99	
STANDARD 3	STANDARD 3	0914	102		100		101		100		100		100	
STANDARD 4	STANDARD 4	0918	101		104		99		97		97		96	
STANDARD 5	STANDARD 5	0922	99		97		96		93		91		94	
ICV	ICV	0925	100		102		98		94		94		95	
ICB1	ZZZZZZ	0929												
ICB2	ICB	0932	101		98		100		99		100		100	
LLICV	LLICV	0942	102		101		100		99		98		98	
ICS-A1	ICSA	0945	85		87		83		80		83		86	
ICS-AB1	ICSAB	0949	90		86		86		84		83		86	
CHECK	ZZZZZZ	1001												
CHECK	ZZZZZZ	1005												
2171085	ZZZZZZ	1009												
2171086	ZZZZZZ	1012												
2171087	ZZZZZZ	1016												
2067881001	ZZZZZZ	1019												
2067881002	ZZZZZZ	1023												
2067881003	ZZZZZZ	1027												
CCV1	ZZZZZZ	1030												
CCB1	ZZZZZZ	1034												
2171024	ZZZZZZ	1038												
2171025	ZZZZZZ	1041												
2067656001	ZZZZZZ	1045												
2171026	ZZZZZZ	1049												
2171027	ZZZZZZ	1052												
2067654001	ZZZZZZ	1056												
2067662001	ZZZZZZ	1100												
2067664001	ZZZZZZ	1103												
2067667001	ZZZZZZ	1107												
2067791001	ZZZZZZ	1110												
CCV2	ZZZZZZ	1114												
CCB2	ZZZZZZ	1118												
2067790001	ZZZZZZ	1121												
2171028	ZZZZZZ	1125												
2171029	ZZZZZZ	1128												
2067776006	ZZZZZZ	1132												
CCV3	CCV	1136	93		85		89		81		81		86	
CCB3	CCB	1139	92		88		89		80		82		87	
LLCCV	LLCCV	1143	92		86		90		83		84		88	
2171266	MB for HBN 70297	1304	96		594	*	97		91		94		103	
2171267	LCS for HBN 7029	1307	96		326	*	95		88		90		100	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2067593003	MRC-MW-104B-0428	1311	85		208	*	88		85		87		95	
2067593004	MRC-MW-112A-0428	1315	91		130	*	92		86		88		99	
2067593004L	MRC-MW-112A-0428	1318	98		108		98		88		91		102	
2067894002	ZZZZZZ	1322												
2067894002S	ZZZZZZ	1326												
2067894002S	ZZZZZZ	1329												
CCV4	ZZZZZZ	1333												
CCB4	CCB	1336	101		89		99		90		95		102	
LLCCV	LLCCV	1340	98		84		99		90		96		101	
CCV5	CCV	1344	101		85		101		92		94		102	
2066872005	ZZZZZZ	1349												
2066872005	ZZZZZZ	1352												
CHECK	ZZZZZZ	1358												
CHECK	ZZZZZZ	1402												
CCV6	ZZZZZZ	1405												
CCB5	ZZZZZZ	1409												
LLCCV	ZZZZZZ	1412												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	1418												
BLK	BLK	1421	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	1425	96		100		97		96		93		95	
STANDARD 2	STANDARD 2	1429	98		99		99		98		107		105	
STANDARD 3	STANDARD 3	1432	99		104		101		100		101		100	
STANDARD 4	STANDARD 4	1436	102		98		101		100		95		96	
STANDARD 5	STANDARD 5	1440	98		92		97		95		94		95	
ICV	ICV	1443	98		93		98		95		94		95	
ICB1	ICB	1447	95		94		95		92		93		94	
LLICV	LLICV	1450	97		96		97		95		95		95	
ICS-A1	ICSA	1454	85		96		87		89		90		92	
ICS-AB1	ICSAB	1458	87		94		89		91		91		93	
CHECK	ZZZZZZ	1501												
CHECK	ZZZZZZ	1505												
2171266	MB for HBN 70297	1509	94		94		94		90		89		93	
2171267	LCS for HBN 7029	1512	98		96		97		93		92		97	
2067593003	MRC-MW-104B-0428	1516	91		93		94		93		93		98	
2067593004	MRC-MW-112A-0428	1520	95		93		96		93		92		97	
2067593004L	MRC-MW-112A-0428	1523	99		93		98		93		94		98	
2067894002	ZZZZZZ	1527												
2067894002S	ZZZZZZ	1531												
2067894002S	ZZZZZZ	1534												
2067527001	ZZZZZZ	1538												
CCV1	CCV	1541	102		110		101		96		94		97	
CCB1	CCB	1545	98		93		97		94		93		95	
LLCCV	LLCCV	1548	98		93		98		95		95		99	
2062468001	ZZZZZZ	1552												
2067008001	ZZZZZZ	1556												
CCV2	ZZZZZZ	1600												
CCB2	ZZZZZZ	1603												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0900												
BLK	0903	100											
STANDARD 1	0907	101											
STANDARD 2	0911	100											
STANDARD 3	0914	101											
STANDARD 4	0918	99											
STANDARD 5	0922	97											
ICV	0925	97											
ZZZZZZ	0929												
ICB	0932	101											
LLICV	0942	101											
ICSA	0945	90											
ICSAB	0949	92											
ZZZZZZ	1001												
ZZZZZZ	1005												
ZZZZZZ	1009												
ZZZZZZ	1012												
ZZZZZZ	1016												
ZZZZZZ	1019												
ZZZZZZ	1023												
ZZZZZZ	1027												
ZZZZZZ	1030												
ZZZZZZ	1034												
ZZZZZZ	1038												
ZZZZZZ	1041												
ZZZZZZ	1045												
ZZZZZZ	1049												
ZZZZZZ	1052												
ZZZZZZ	1056												
ZZZZZZ	1100												
ZZZZZZ	1103												
ZZZZZZ	1107												
ZZZZZZ	1110												
ZZZZZZ	1114												
ZZZZZZ	1118												
ZZZZZZ	1121												
ZZZZZZ	1125												
ZZZZZZ	1128												
ZZZZZZ	1132												
CCV	1136	91											
CCB	1139	90											
LLCCV	1143	92											
MB for HBN 70297	1304	98											
LCS for HBN 7029	1307	97											
MRC-MW-104B-0428	1311	95											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
MRC-MW-112A-0428	1315	96											
MRC-MW-112A-0428	1318	98											
ZZZZZZ	1322												
ZZZZZZ	1326												
ZZZZZZ	1329												
ZZZZZZ	1333												
CCB	1336	100											
LLCCV	1340	99											
CCV	1344	101											
ZZZZZZ	1349												
ZZZZZZ	1352												
ZZZZZZ	1358												
ZZZZZZ	1402												
ZZZZZZ	1405												
ZZZZZZ	1409												
ZZZZZZ	1412												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM025|112IC06247

Lab Code: CAS Case No.: NRAS No.: SDG NO.: TMM-025

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 04/30/2015 End Date: 04/30/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1418												
BLK	1421	100											
STANDARD 1	1425	96											
STANDARD 2	1429	99											
STANDARD 3	1432	100											
STANDARD 4	1436	101											
STANDARD 5	1440	97											
ICV	1443	97											
ICB	1447	94											
LLICV	1450	97											
ICSA	1454	92											
ICSAB	1458	93											
ZZZZZZ	1501												
ZZZZZZ	1505												
MB for HBN 70297	1509	95											
LCS for HBN 7029	1512	97											
MRC-MW-104B-0428	1516	102											
MRC-MW-112A-0428	1520	98											
MRC-MW-112A-0428	1523	99											
ZZZZZZ	1527												
ZZZZZZ	1531												
ZZZZZZ	1534												
ZZZZZZ	1538												
CCV	1541	101											
CCB	1545	97											
LLCCV	1548	98											
ZZZZZZ	1552												
ZZZZZZ	1556												
ZZZZZZ	1600												
ZZZZZZ	1603												

Total Metals by 6010C Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	1.010	1.000	101		90 - 110	P	4/29/2015	08:53	042915A 30
CCV	Iron	2.459	2.500	98		90 - 110	P	4/29/2015	09:03	042915A 30
CCV	Iron	2.562	2.500	102		90 - 110	P	4/29/2015	12:50	042915A 30
CCV	Iron	2.602	2.500	104		90 - 110	P	4/29/2015	13:34	042915A 30
CCV	Iron	2.618	2.500	105		90 - 110	P	4/29/2015	14:00	042915A 30
LLCCV	Iron	0.064	0.060	107		70 - 130	P	4/29/2015	14:36	042915A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.066	0.060	110		70 - 130	P	4/29/2015	08:59	042915A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	08:56	042915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	12:53	042915A 3015
CCB	Iron	0.025	J	0.060	0.022	0.060	P	4/29/2015	13:30	042915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	4/29/2015	14:03	042915A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2170613			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	4/29/2015	13:02	042915A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	114.8	125.0	92		80 - 120%	4/29/2015	09:08	042915A 3015
ICSAB									
	Iron	118.1	125.0	94		80 - 120%	4/29/2015	09:11	042915A 3015
ICSA									
	Iron	114.1	125.0	91		80 - 120%	4/29/2015	14:40	042915A 3015
ICSAB									
	Iron	116.0	125.0	93		80 - 120%	4/29/2015	14:43	042915A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2170614									
	Iron	mg/L	1.11	1.222		110		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	69975						
2170613	MB for HBN 69975 [MDIG/50588	MB	QC-WAT	4/29/15	45.0	50.0	
2170614	LCS for HBN 69975 [MDIG/50588	LCS	QC-WAT	4/29/15	45.0	50.0	
2067593004	MRC-MW-112A-042815	SAM	WATER	4/29/15	45.0	50.0	
2067593003	MRC-MW-104B-042815	SAM	WATER	4/29/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0838												X													
ICAL2	1.00	0841												X													
ICAL3	1.00	0844												X													
ICAL4	1.00	0847												X													
ICAL5	1.00	0850												X													
ICV1	1.00	0853												X													
ICB1	1.00	0856												X													
CRDL1	1.00	0859												X													
CCV1	1.00	0903												X													
HIGH	1.00	0905												X													
ICS-A1	1.00	0908												X													
ICS-AB1	1.00	0911												X													
ZZZZZZ	1.00	0918																									
ZZZZZZ	1.00	0921																									
ZZZZZZ	5.00	0924																									
ZZZZZZ	5.00	0927																									
ZZZZZZ	5.00	0931																									
ZZZZZZ	5.00	0934																									
ZZZZZZ	5.00	0937																									
ZZZZZZ	5.00	0940																									
ZZZZZZ	1.00	0943																									
ZZZZZZ	1.00	0947																									
ZZZZZZ	1.00	0950																									
ZZZZZZ	1.00	0953																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	0959																									
ZZZZZZ	1.00	1002																									
ZZZZZZ	5.00	1006																									
ZZZZZZ	5.00	1009																									
ZZZZZZ	5.00	1012																									
ZZZZZZ	5.00	1015																									
ZZZZZZ	5.00	1018																									
ZZZZZZ	5.00	1022																									
ZZZZZZ	5.00	1025																									
ZZZZZZ	1.00	1028																									
ZZZZZZ	1.00	1031																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1034																								
ZZZZZZ	5.00	1037																								
ZZZZZZ	5.00	1041																								
ZZZZZZ	5.00	1044																								
ZZZZZZ	5.00	1047																								
ZZZZZZ	5.00	1050																								
ZZZZZZ	5.00	1054																								
ZZZZZZ	5.00	1057																								
ZZZZZZ	1.00	1100																								
ZZZZZZ	1.00	1103																								
ZZZZZZ	1.00	1106																								
ZZZZZZ	1.00	1109																								
ZZZZZZ	1.00	1113																								
ZZZZZZ	1.00	1130																								
ZZZZZZ	1.00	1133																								
ZZZZZZ	1.00	1136																								
ZZZZZZ	5.00	1141																								
ZZZZZZ	1.00	1144																								
ZZZZZZ	1.00	1147																								
ZZZZZZ	1.00	1150																								
ZZZZZZ	1.00	1153																								
ZZZZZZ	1.00	1156																								
ZZZZZZ	1.00	1159																								
ZZZZZZ	1.00	1203																								
ZZZZZZ	1.00	1206																								
ZZZZZZ	1.00	1209																								
ZZZZZZ	1.00	1212																								
ZZZZZZ	1.00	1215																								
ZZZZZZ	1.00	1218																								
ZZZZZZ	1.00	1221																								
ZZZZZZ	1.00	1224																								
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1231																								
ZZZZZZ	1.00	1234																								
ZZZZZZ	1.00	1237																								
ZZZZZZ	1.00	1240																								

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-025

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 042915A 3015

Start Date: 4/29/2015 End Date: 4/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1243																									
ZZZZZZ	1.00	1246																									
CCV6	1.00	1250												X													
CCB5	1.00	1253												X													
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1259																									
2170613	1.00	1302												X													
2170614	1.00	1305												X													
ZZZZZZ	1.00	1308																									
ZZZZZZ	5.00	1311																									
2067593004	1.00	1314												X													
2067593003	1.00	1317												X													
ZZZZZZ	5.00	1321																									
ZZZZZZ	5.00	1324																									
ZZZZZZ	1.00	1327																									
CCB6	1.00	1330												X													
CCV8	1.00	1334												X													
ZZZZZZ	5.00	1337																									
ZZZZZZ	5.00	1340																									
ZZZZZZ	5.00	1344																									
ZZZZZZ	5.00	1347																									
CCV9	1.00	1400												X													
CCB7	1.00	1403												X													
ZZZZZZ	1.00	1416																									
LLCCV	1.00	1436												X													
ICS-A3	1.00	1440												X													
ICS-AB3	1.00	1443												X													

Total Mercury by 7470A Summary Forms

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	13:30	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:21	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:35	050415W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/4/2015	14:48	050415W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	13:31	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:23	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:36	050415W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/4/2015	14:49	050415W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171915			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/4/2015	14:31	050415W

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- 7 -
LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171916									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-025

Contract: TMM025|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70515						
2171915	MB for HBN 70515 [MDIG/50632	MB	QC-WAT	5/4/15	25.0	25.0	
2171916	LCS for HBN 70515 [MDIG/50632	LCS	QC-WAT	5/4/15	25.0	25.0	
2067593003	MRC-MW-104B-042815	SAM	WATER	5/4/15	25.0	25.0	
2067593004	MRC-MW-112A-042815	SAM	WATER	5/4/15	25.0	25.0	

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-025

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1324																X									
Standard #1 (0.2ppb	1.00	1325																X									
	1.00	1326																X									
	1.00	1327																X									
	1.00	1328																X									
	1.00	1329																X									
ICV1	1.00	1330																X									
ICB1	1.00	1331																X									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1338																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-025

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1402																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1404																										
ZZZZZZ	1.00	1405																										
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1407																										
ZZZZZZ	1.00	1408																										
ZZZZZZ	1.00	1410																										
ZZZZZZ	1.00	1411																										
ZZZZZZ	1.00	1412																										
ZZZZZZ	1.00	1413																										
ZZZZZZ	1.00	1414																										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1416																										
ZZZZZZ	1.00	1417																										
ZZZZZZ	1.00	1418																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1420																										
CCV4	1.00	1421																X										
CCB4	1.00	1423																X										
ZZZZZZ	1.00	1424																										
ZZZZZZ	1.00	1425																										
ZZZZZZ	1.00	1426																										
ZZZZZZ	1.00	1427																										
ZZZZZZ	1.00	1428																										
ZZZZZZ	1.00	1429																										
ZZZZZZ	1.00	1430																										
2171915	1.00	1431																X										
2171916	1.00	1432																X										
ZZZZZZ	1.00	1433																										
CCV5	1.00	1435																X										
CCB5	1.00	1436																X										
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1438																										
ZZZZZZ	1.00	1439																										
ZZZZZZ	1.00	1440																										

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM025|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-025

Instrument ID Number: Cetac Hg Method: CV Run Number: 050415W

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1442																										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
2067593003	1.00	1446																X										
2067593004	1.00	1447																X										
CCV6	1.00	1448																X										
CCB6	1.00	1449																X										
ZZZZZZ	1.00	1450																										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1454																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1515																										
ZZZZZZ	1.00	1516																										

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JUNE 10, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/TOTAL METALS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2068168R

SAMPLES:

3/Aqueous/VOCs

MRC-MW-94B-043015 MRC-MW-95B-043015 TB-043015

1/Aqueous/SVOCs/

EXT-MW06-043015

1/Aqueous/Metals

MRC-MW-04B-043015

Overview

The sample set for LMC-MRC, SDG 2067368R consisted of four (4) aqueous environmental samples and one (1) trip blank. Samples MRC-MW-94B-043015, MRC-MW-95B-043015, and the trip blank (TB-043015) were analyzed for volatile organic compounds (VOCs). Sample EXT-MW06-043015 was analyzed for 1,4-dioxane. Sample MRC-MW-04B-043015 was analyzed for select total metals. No field duplicate sample pairs were included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 30, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A and EPA Method 522 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major - No major issues were noted.

Minor

- Metals internal standard recovery for Ge_72 was greater than the QC limit. Detected results for associated metals were qualified as estimated, (J).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

The following compounds were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Carbon Disulfide	0.41	2.05
1,4-Dichlorobenzene	0.33	1.65

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as results for samples MRC-MW-94B-043015 and MRC-MW-95B-043015 were nondetects. The trip blank was not qualified for blank contamination.

Iron was detected in the laboratory preparation blank at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Iron	0.026	0.13

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as the iron result for sample MRC-MW-04B-043015 was greater than the blank action level.

Executive Summary

Laboratory Performance: Contaminants were detected in the laboratory method blanks. Internal standard recovery noncompliance was noted affecting 6020 analysis.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-MW-94B-043015			MRC-MW-95B-043015			TB-043015		
SDG: 2068168R	LAB_ID	2068168004			2068168003			2068168001		
FRACTION: OV	SAMP_DATE	4/30/2015			4/30/2015			4/30/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	U	
2-BUTANONE		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U	
ACETONE		5.6	J	P	3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.61	J	P	0.59	J	P	0.49	J	P
CARBON DISULFIDE		0.23	U		0.23	U		0.28	J	P
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.32	J	P	0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-94B-043015			MRC-MW-95B-043015			TB-043015		
SDG: 2068168R	LAB_ID	2068168004			2068168003			2068168001		
FRACTION: OV	SAMP_DATE	4/30/2015			4/30/2015			4/30/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									

PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE	0.33	U		0.33	U		0.33	U	
ETHYLBENZENE	0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE	0.22	U		0.22	U		0.22	U	
M+P-XYLENES	0.52	U		0.52	U		0.52	U	
METHYL ACETATE	0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE	0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER	0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE	0.45	U		0.45	U		0.45	U	
O-XYLENE	0.33	U		0.33	U		0.33	U	
STYRENE	0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE	0.35	U		0.35	U		0.35	U	
TOLUENE	0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE	0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE	0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE	0.33	U		2.7			0.33	U	
TRICHLOROFLUOROMETHANE	0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE	0.3	U		0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	EXT-MW06-043015		
SDG: 2068168R	LAB_ID	2068168002		
FRACTION: OS	SAMP_DATE	4/30/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,4-DIOXANE		1.2		

PROJ_NO: 06247	NSAMPLE	MRC-MW-04B-043015		
SDG: 2068168R	LAB_ID	2068168005		
FRACTION: M	SAMP_DATE	4/30/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.001	U	
BARIUM		0.41		
BERYLLIUM		0.0003	U	
CADMIUM		0.0014	J	N
CHROMIUM		0.0014	J	PN
COBALT		0.12	J	N
COPPER		0.044	J	N
IRON		0.38		
LEAD		0.00074	U	
MANGANESE		2	J	N
MERCURY		0.00017	U	
MOLYBDENUM		0.0017	J	PN
NICKEL		0.14	J	N
SELENIUM		0.0019	U	
SILVER		0.00074	U	
THALLIUM		0.00036	J	PN
VANADIUM		0.00074	U	

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168001** Date Collected: 4/30/2015 00:00 Matrix: Water

Sample ID: **TB-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 21:56	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 21:56	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 21:56	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 21:56	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 21:56	CJG	A
Bromomethane	0.49J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 21:56	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 21:56	CJG	A
Carbon Disulfide	0.28J	J	ug/L	1.0	0.23	SW846 8260C		5/6/15 21:56	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 21:56	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 21:56	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 21:56	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 21:56	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 21:56	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 21:56	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 21:56	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 21:56	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 21:56	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 21:56	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 21:56	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 21:56	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 21:56	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 21:56	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 21:56	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 21:56	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 21:56	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 21:56	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 21:56	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 21:56	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 21:56	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 21:56	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 21:56	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 21:56	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 21:56	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 21:56	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 21:56	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 21:56	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168001** Date Collected: 4/30/2015 00:00 Matrix: Water

Sample ID: **TB-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 21:56	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/6/15 21:56	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/6/15 21:56	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 21:56	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/6/15 21:56	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/6/15 21:56	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/6/15 21:56	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/6/15 21:56	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/6/15 21:56	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/6/15 21:56	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 21:56	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 21:56	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 21:56	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/6/15 21:56	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 21:56	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/6/15 21:56	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.3		%	62 - 133	SW846 8260C			5/6/15 21:56	CJG	A
4-Bromofluorobenzene (S)	89.9		%	79 - 114	SW846 8260C			5/6/15 21:56	CJG	A
Dibromofluoromethane (S)	86.3		%	78 - 116	SW846 8260C			5/6/15 21:56	CJG	A
Toluene-d8 (S)	98		%	76 - 127	SW846 8260C			5/6/15 21:56	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168002** Date Collected: 4/30/2015 10:28 Matrix: Water

Sample ID: **EXT-MW06-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES											
1,4-Dioxane	1.2		ug/L	0.070	0.014	EPA 522	5/4/15	JEK	5/5/15 19:13	CGS	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81.4		%	70 - 130		EPA 522	5/4/15	JEK	5/5/15 19:13	CGS	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168003** Date Collected: 4/30/2015 11:32 Matrix: Water

Sample ID: **MRC-MW-95B-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 22:30	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:30	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:30	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:30	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 22:30	CJG	A
Bromomethane	0.59J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 22:30	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 22:30	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:30	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:30	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 22:30	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:30	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 22:30	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:30	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:30	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 22:30	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:30	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 22:30	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 22:30	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:30	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:30	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:30	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:30	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:30	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:30	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:30	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:30	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:30	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 22:30	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:30	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:30	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 22:30	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:30	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 22:30	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:30	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168003** Date Collected: 4/30/2015 11:32 Matrix: Water

Sample ID: **MRC-MW-95B-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 22:30	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:30	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:30	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:30	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 22:30	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:30	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 22:30	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 22:30	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:30	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
Trichloroethene	2.7		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:30	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:30	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:30	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 22:30	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260C		5/6/15 22:30	CJG	A
4-Bromofluorobenzene (S)	85.5		%	79 - 114	SW846 8260C		5/6/15 22:30	CJG	A
Dibromofluoromethane (S)	88.6		%	78 - 116	SW846 8260C		5/6/15 22:30	CJG	A
Toluene-d8 (S)	96.6		%	76 - 127	SW846 8260C		5/6/15 22:30	CJG	A

Debra J Musser

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Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168004** Date Collected: 4/30/2015 13:27 Matrix: Water

Sample ID: **MRC-MW-94B-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	5.6J	J	ug/L	10.0	3.1	SW846 8260C		5/6/15 22:47	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:47	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:47	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:47	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 22:47	CJG	A
Bromomethane	0.61J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 22:47	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 22:47	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:47	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:47	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 22:47	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:47	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 22:47	CJG	A
Chloromethane	0.32J	J	ug/L	1.0	0.31	SW846 8260C		5/6/15 22:47	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:47	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 22:47	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:47	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 22:47	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 22:47	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 22:47	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 22:47	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:47	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:47	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 22:47	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:47	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:47	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 22:47	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 22:47	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 22:47	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:47	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 22:47	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 22:47	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:47	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 22:47	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:47	CJG	A

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168004** Date Collected: 4/30/2015 13:27 Matrix: Water

Sample ID: **MRC-MW-94B-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 22:47	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 22:47	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:47	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 22:47	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 22:47	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 22:47	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 22:47	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 22:47	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 22:47	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 22:47	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 22:47	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 22:47	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 22:47	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260C		5/6/15 22:47	CJG	A
4-Bromofluorobenzene (S)	87.6		%	79 - 114	SW846 8260C		5/6/15 22:47	CJG	A
Dibromofluoromethane (S)	92.4		%	78 - 116	SW846 8260C		5/6/15 22:47	CJG	A
Toluene-d8 (S)	100		%	76 - 127	SW846 8260C		5/6/15 22:47	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068168 TMM027|112IC06247

Lab ID: **2068168005** Date Collected: 4/30/2015 14:33 Matrix: Water

Sample ID: **MRC-MW-04B-043015** Date Received: 4/30/2015 20:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Barium, Total	0.41		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Cadmium, Total	0.0014		mg/L	0.0011	0.00037	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Chromium, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Cobalt, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Copper, Total	0.044		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Iron, Total	0.38		mg/L	0.067	0.022	SW846 6010C	5/4/15	AAM	5/4/15 13:15	SRT	A1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Manganese, Total	2.0		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:23	MNP	A3
Molybdenum, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Nickel, Total	0.14		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Thallium, Total	0.00036J	J	mg/L	0.0010	0.00030	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/4/15	AAM	5/5/15 02:23	ZMC	A2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-027

Sample Management

This report contains the results of the analysis of five (5) water samples collected on April 30, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 30, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Three (3) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. The batch LCS also serves as a second source (ICV).

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2173978, carbon disulfide was detected at 0.41J µg/L and 1,4-dichlorobenzene was detected at 0.33J µg/L..

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. One (1) water sample was extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the ICB and CCB analyzed at 00:02 and 01:03 at 0.0012 J mg/L and 0.0009 J mg/L respectively.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3b represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. One (1) water sample was analyzed for total mercury using EPA method 7470A. The sample was digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 5/26/2015

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER No 128489

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME
112IC06247.	MRC-GW 2015	Tony Apanavage	301 528-3021	AL
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Walt Pyon		Walt Pyon	301 991-3914	
		CARRIER/WAYBILL NUMBER		CITY, STATE

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: VOCs	Total metals	1,4 Dioxane	COMMENTS
4-30	—	TB-043015	TB	—	—	QC	G	3			X			
	1028	EXT-MW06-043015	MW06	—	—	GW		2					X	
	1132	MRC-MW-95B-043015	MW95B	—	—			3			X			
	1327	MRC-MW-94B-043015	94B	—	—			3			X			
	1433	MRC-MW-04A-043015	04A	—	—			1				X		

Rmk 511
557

	Y	N	Initials	Cooler Temp: °C
Custody Seals Present?				
(if present) Seals Intact?				Cooler #:
Received on Ice?				
COC/Lbls Complete				Therm ID:
Cont in Good Cond?				
Correct Containers?				Ship Carrier:
Correct Samp Vol?				FedEx UPS
Correct Preservation?				DHL
Headspace/Volatiles?				

Tracking #:

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Walt Pyon	4-30-15	1545	1. RECEIVED BY	4/30/15	1545
2. RELINQUISHED BY	4/30/15		2. RECEIVED BY	4/30	1650
3. RELINQUISHED BY	4/30	2025	3. RECEIVED BY SFS	4/30	2025

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2068168 TMM027|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2068168001	TB-043015	Water	4/30/2015 00:00	4/30/2015 20:25	Collected by Client
2068168002	EXT-MW06-043015	Water	4/30/2015 10:28	4/30/2015 20:25	Collected by Client
2068168003	MRC-MW-95B-043015	Water	4/30/2015 11:32	4/30/2015 20:25	Collected by Client
2068168004	MRC-MW-94B-043015	Water	4/30/2015 13:27	4/30/2015 20:25	Collected by Client
2068168005	MRC-MW-04B-043015	Water	4/30/2015 14:33	4/30/2015 20:25	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-027

Lab File ID: 15050650.D BFB Injection Date: 5/6/2015

Instrument ID: ms15.i BFB Injection Time: 17:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.8
175	5.0 - 9.0% of mass 174	5.8 (7.3) 1
176	95.0 - 101.0% of mass 174	75.9 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15050653.D	5/6/2015	18:13
1234	1234	15050654.D	5/6/2015	18:30
1235	1235	15050655.D	5/6/2015	18:48
1236	1236	15050656.D	5/6/2015	19:05
1237	1237	15050657.D	5/6/2015	19:22
1238	1238	15050658.D	5/6/2015	19:39
1239	1239	15050659.D	5/6/2015	19:56
2173978(MB)	2173978	15050663.D	5/6/2015	21:05
2173979(LCS)	2173979	15050664.D	5/6/2015	21:22
TB-043015	2068168001	15050666.D	5/6/2015	21:56
MRC-MW-95B-043015	2068168003	15050668.D	5/6/2015	22:30
MRC-MW-94B-043015	2068168004	15050669.D	5/6/2015	22:47

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	8501	35072	135342	350427	731790	L
Acrolein	0.03945	0.03688	0.03697	0.03725	0.03731	A
Acrylonitrile	0.09911	0.09209	0.09262	0.09072	0.08947	A
Acetonitrile	11597	55954	224250	462085	952278	L
tert-Amyl Ethylether	21769	118195	571081	1645134	3793931	Q
tert-Amyl methyl ether	29058	166309	788729	2237478	5058853	L
tert-Amyl Alcohol	3718	18089	78426	233257	531891	Q
Benzene	1.28974	1.24799	1.26475	1.20941	1.19795	A
Benzyl Chloride	1807	10498	55797	207230	567365	Q
Bromobenzene	0.82401	0.85585	0.94005	0.92938	0.90435	A
Bromochloromethane	0.17552	0.16960	0.16314	0.15572	0.15246	A
Bromodichloromethane	0.35528	0.33663	0.35731	0.36178	0.37690	A
Bromoform *	0.36674	0.32937	0.35450	0.39438	0.41777	A
Bromomethane	14837	65495	226567	494685	965103	L
2-Butanone	0.02934	0.03221	0.03325	0.03312	0.03438	A
tert.- Butyl Alcohol	0.02009	0.01626	0.01693	0.01651	0.01704	A
tert-Butylbenzene	7838	61810	365956	1034851	2257570	Q
n-Butylbenzene	9241	56953	361835	1066134	2381679	Q
sec-Butylbenzene	42023	327817	1941705	5419791	11645036	Q
Carbon Disulfide	0.64155	0.55003	0.56368	0.57705	0.61526	A
Carbon Tetrachloride	0.34641	0.33672	0.35162	0.34896	0.35865	A
Chloroacetonitrile	1626	9683	51683	152302	332972	Q
Chlorobenzene *	2.45835	2.23439	2.16237	2.07797	2.07798	A
1-Chlorobutane	0.31205	0.28785	0.29144	0.27959	0.27271	A
Chlorodibromomethane	0.63400	0.54654	0.61265	0.64779	0.69258	A
Chloroethane	0.19755	0.19587	0.18536	0.17272	0.17070	A
2-Chloroethylvinyl ether	63.00000	1245	4728	15174	49027	Q
Chloroform **	64764	235362	875496	2166008	4486712	L
1-Chlorohexane	13506	83631	467723	1389198	3201755	L
Chloromethane *	30967	138649	539207	1316365	2683003	L
Chloroprene	0.41968	0.37875	0.39134	0.39030	0.40126	A
3-Chloro-1-propene	0.29473	0.26216	0.25692	0.24944	0.25323	A
o-Chlorotoluene	2.16415	2.26581	2.78420	2.85677	2.85244	A
p-Chlorotoluene	36372	251616	1382039	3840609	8372873	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.38635	0.37545	0.41271	0.40873	0.41527	A
1,2-Dibromo-3-Chloropropane	2487	10943	50772	154863	359963	Q
1,2-Dibromoethane	0.59915	0.55060	0.55721	0.58496	0.59813	A
Dibromomethane	0.20067	0.17672	0.17531	0.17241	0.17203	A
trans-1,4-Dichloro-2-butene	3098	19803	98850	278421	610749	Q
1,2-Dichlorobenzene	1.64743	1.59083	1.69102	1.66838	1.64577	A
1,3-Dichlorobenzene	1.68161	1.69912	1.80604	1.75330	1.72712	A
1,4-Dichlorobenzene	2.01369	1.87937	1.84806	1.79339	1.75948	A
Dichlorodifluoromethane	24504	128057	484555	1163500	2408931	L
1,1-Dichloroethane *	0.64100	0.56262	0.55519	0.51796	0.51154	A
1,2-Dichloroethene, Total	54837	249865	1041228	2713259	5792365	L
1,2-Dichloroethane	0.45282	0.40321	0.39029	0.36789	0.35695	A
1,1-Dichloroethene **	25684	122667	494331	1252956	2656177	L
cis-1,2-Dichloroethene	0.44345	0.38248	0.38404	0.38001	0.38483	A
trans-1,2-Dichloroethene	26363	117671	480631	1221323	2586330	L
Dichlorofluoromethane	35935	177027	713747	1773821	3768998	L
1,1-Dichloro-2-Propanone	1005	6320	32354	96770	215325	Q
2,2-Dichloropropane	0.33269	0.29873	0.30793	0.31277	0.32932	A
1,3-Dichloropropane	1.15396	1.07214	1.07134	1.09543	1.10703	A
1,2-Dichloropropane **	0.31229	0.29880	0.30670	0.29957	0.30447	A
1,1-Dichloropropene	0.37952	0.38336	0.40267	0.39628	0.40129	A
cis-1,3-Dichloropropene	17218	100093	523685	1610572	3728252	Q
trans-1,3-Dichloropropene	15073	89606	495010	1450365	3305129	Q
1,3-Dichloropropene, Total	32291	189699	1018695	3060937	7033381	L
Diisobutylene	98672	259936	952410	2466418	5297899	L
Diisopropyl ether	0.83075	0.78390	0.80978	0.80686	0.81767	A
1,4-Dioxane	3928	18650	99538	290846	649257	Q
Ethyl Acetate	0.22784	0.19498	0.21243	0.21553	0.21794	A
Ethyl ether	0.17981	0.15695	0.15163	0.15205	0.15153	A
Ethyl Methacrylate	11494	75076	423595	1334399	3017311	Q
Ethyl tert-butyl ether	0.64208	0.61131	0.66553	0.68787	0.71346	A
Ethylbenzene **	0.91262	1.00200	1.09645	1.06897	1.09821	A
Freon 113	0.28748	0.25080	0.22976	0.21149	0.20744	A
Heptane	9489	53019	259175	726713	1597366	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.52702	0.41287	0.41054	0.40558	0.41845	A
Hexachloroethane	0.50334	0.39568	0.44830	0.48667	0.52952	A
Hexane	0.45804	0.40253	0.37947	0.37915	0.38040	A
2-Hexanone	26266	174955	1039944	3093854	6608143	L
Iodomethane	2621	12319	85152	363793	941538	L
Isobutyl alcohol	0.01404	0.01282	0.01447	0.01424	0.01459	A
Isopropyl Alcohol	0.01474	0.01042	0.01077	0.01096	0.01095	A
Isopropylbenzene	43372	288511	1743721	5098736	11327248	Q
p-Isopropyltoluene	7861	65312	409298	1210285	2680089	Q
Methyl acetate	0.04717	0.04227	0.03895	0.03698	0.03666	A
Methyl acrylate	0.20265	0.18987	0.21111	0.21999	0.22821	A
Methacrylonitrile	5494	39746	176725	455703	946249	L
Methyl cyclohexane	1.05246	1.01059	1.04947	1.05313	1.08238	A
Methyl methacrylate	7983	40667	221833	698004	1593085	Q
Methyl t-Butyl Ether	0.65330	0.56953	0.55894	0.55807	0.57066	A
4-Methyl-2-Pentanone(MIBK)	46008	286802	1593100	4545674	9554810	Q
Methylene Chloride	40634	120012	420925	1032928	2125959	L
Naphthalene	18581	94297	634655	2564618	6395734	Q
Nitrobenzene	4302	18609	90511	314227	985933	Q
2-Nitropropane	10064	59135	303345	941878	2142630	Q
Octane	5189	30412	189507	588837	1314693	Q
Pentachloroethane	0.67263	0.59764	0.62486	0.62708	0.62217	A
Pentane	0.18013	0.16149	0.14470	0.13477	0.13207	A
n-Propanol	0.02423	0.02189	0.02143	0.01990	0.01824	A
Propionitrile	0.04270	0.03710	0.03654	0.03590	0.03510	A
n-Propylbenzene	11323	83681	525133	1445818	3158530	Q
Styrene	29192	181101	1216935	3511833	7679595	Q
1,1,1,2-Tetrachloroethane	0.74409	0.67284	0.68376	0.67814	0.69872	A
1,1,2,2-Tetrachloroethane *	1.13950	0.94878	0.89913	0.88907	0.83701	A
Tetrachloroethene	0.86026	0.74852	0.69360	0.63646	0.62864	A
Tetrahydrofuran	0.05261	0.05796	0.06412	0.06685	0.06667	A
Toluene **	1.46489	1.52937	1.80268	1.79680	1.82682	A
Total Xylenes	62607	414011	2245705	6309744	13814041	L
1,2,3-Trichlorobenzene	11589	66501	396432	1217634	2715851	Q

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SPCC Compounds (*) with required minimum RRF.
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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	13726	77222	435037	1396255	3281656	Q
1,1,1-Trichloroethane	0.44527	0.41514	0.42180	0.40954	0.41473	A
1,1,2-Trichloroethane	0.70775	0.59375	0.56529	0.54252	0.53707	A
Trichloroethene	0.36183	0.32858	0.32177	0.30710	0.30379	A
Trichlorofluoromethane	0.51189	0.48947	0.43838	0.40675	0.39547	A
1,2,3-Trichloropropane	0.32003	0.28372	0.28263	0.26746	0.25860	A
1,2,4-Trimethylbenzene	33499	252668	1612868	4476039	9859778	Q
1,3,5-Trimethylbenzene	30854	252677	1592710	4389664	9595121	Q
Vinyl Acetate	2740	15997	81079	228469	502515	Q
Vinyl Chloride **	22127	108617	440365	1120144	2398158	L
o-Xylene	18818	114724	656929	2013464	4525328	Q
mp-Xylene	0.93062	1.09366	1.30718	1.31991	1.34868	A
4-Bromofluorobenzene	16450	84619	411821	1169236	2598331	L
Dibromofluoromethane	0.35159	0.31139	0.29959	0.28790	0.28615	A
1,2-Dichloroethane-d4	28303	127446	471263	1202056	2461708	L
Toluene-d8	2.38860	2.21270	2.40160	2.44191	2.52755	A

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	1487496			L	0.000000	55.562489		0.99972
Acrolein	0.03828	0.04603		A		0.038880		8.43794
Acrylonitrile	0.09559	0.10188		A		0.094500		4.84620
Acetonitrile	1974485			L	0.000000	41.937870		0.99803
tert-Amyl Ethylether	8552003	12224		Q	0.000000	0.387160	0.020030	0.99999
tert-Amyl methyl ether	11223846	15157		L	0.000000	1.509960		0.99497
tert-Amyl Alcohol	1261596	1579		Q	0.000000	0.010370	0.000150	0.99996
Benzene	0.92262	1.40154		A		1.219140		12.05685
Benzyl Chloride				Q	0.000000	0.099450	0.024470	0.99967
Bromobenzene	0.95110	0.80106		A		0.886540		6.72760
Bromochloromethane	0.14709	0.20028		A		0.166260		10.79593
Bromodichloromethane	0.40396	0.37793		A		0.367110		5.84639
Bromoform *	0.48813	0.33204		A		0.383280		14.65896
Bromomethane	2050088			L	0.000000	8.103020		0.99728
2-Butanone	0.03653			A		0.033140		7.18044
tert.- Butyl Alcohol	0.01932			A		0.017690		9.06431
tert-Butylbenzene	4642215	3868		Q	0.000000	0.688690	0.009870	0.99995
n-Butylbenzene	4906962			Q	0.000000	0.713050	0.012760	0.99993
sec-Butylbenzene	16063735	17046		Q	-0.267280	4.665220	-0.300370	0.99814
Carbon Disulfide	0.65080	0.74826		A		0.620950		10.96066
Carbon Tetrachloride	0.37573	0.33355		A		0.350230		4.03841
Chloroacetonitrile	739616			Q	0.000000	0.016550	0.000180	0.99988
Chlorobenzene *	2.04001	2.37875		A		2.204260		7.32791
1-Chlorobutane	0.27771	0.31060		A		0.290280		5.40157
Chlorodibromomethane	0.79705	0.61836		A		0.649850		12.05101
Chloroethane	0.16012			A		0.180390		8.30640
2-Chloroethylvinyl ether		71.00000		Q	0.000000	0.002100	0.001130	0.99952
Chloroform **	9028784	49185		L	0.000000	1.824750		0.99969
1-Chlorohexane	6864326	6871		L	0.000000	0.985690		0.99409
Chloromethane *	5425849			L	0.000000	3.037050		0.99954
Chloroprene	0.42001	0.48584		A		0.412460		8.68095
3-Chloro-1-propene	0.24646	0.34853		A		0.273070		13.54156
o-Chlorotoluene	2.60631	2.21453		A		2.534890		12.30947
p-Chlorotoluene	14110231	15830		Q	0.000000	2.912310	-0.091910	0.99956
Cyclohexane	0.42766	0.32991		A		0.393730		8.46357
1,2-Dibromo-3-Chloropropane	828598	1155		Q	0.000000	0.095440	0.005890	0.99996

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.67905	0.66635		A		0.605060		8.25662
Dibromomethane	0.18178	0.20731		A		0.183750		7.79907
trans-1,4-Dichloro-2-butene	1335426	832		Q	0.000000	0.176960	0.005990	0.99990
1,2-Dichlorobenzene	1.74573	1.62186		A		1.658720		3.01129
1,3-Dichlorobenzene	1.81859	1.57616		A		1.723130		4.78628
1,4-Dichlorobenzene	1.83424	2.01043		A		1.876950		5.32592
Dichlorodifluoromethane	4848952			L	0.000000	3.397030		0.99959
1,1-Dichloroethane *		0.72538		A		0.585610		14.10649
1,2-Dichloroethene, Total	11862157	30886		L	0.000000	2.795550		0.99956
1,2-Dichloroethane	0.36755	0.44716		A		0.397980		9.74642
1,1-Dichloroethene **	5336933	15733		L	0.000000	3.090710		0.99986
cis-1,2-Dichloroethene	0.40488	0.47415		A		0.407690		9.06038
trans-1,2-Dichloroethene	5210063	15512		L	0.000000	3.167850		0.99984
Dichlorofluoromethane	7551750	22300		L	0.000000	2.182690		0.99985
1,1-Dichloro-2-Propanone	479650			Q	0.000000	0.010550	0.000120	0.99993
2,2-Dichloropropane	0.35920	0.34952		A		0.327160		6.77379
1,3-Dichloropropane	1.22249	1.13681		A		1.122740		4.78504
1,2-Dichloropropane **	0.31960	0.35014		A		0.313080		5.71048
1,1-Dichloropropene	0.41431	0.41389		A		0.398760		3.40432
cis-1,3-Dichloropropene	8231315	10015		Q	0.000000	0.897100	0.054120	0.99996
trans-1,3-Dichloropropene	7237259	7110		Q	0.000000	0.812440	0.043970	0.99998
1,3-Dichloropropene, Total	15468574	17125		L	0.000000	0.879600		0.99224
Diisobutylene	10831379	72367		L	0.000000	1.530470		0.99945
Diisopropyl ether	0.79384	0.90312		A		0.820840		4.79358
1,4-Dioxane	1399691			Q	0.000000	0.002800	0.000001	0.99997
Ethyl Acetate	0.23822	0.20713		A		0.216300		6.45785
Ethyl ether	0.15706	0.20420		A		0.164750		12.16900
Ethyl Methacrylate	6663493	5615		Q	0.000000	0.734110	0.042580	0.99993
Ethyl tert-butyl ether	0.75888	0.72254		A		0.685950		7.36936
Ethylbenzene **	1.18268	0.98979		A		1.050100		8.45052
Freon 113	0.20818	0.25052		A		0.235100		12.64637
Heptane	3274130	2764		L	0.000000	5.076210		0.99920
Hexachlorobutadiene	0.43929	0.47725		A		0.441570		10.20987
Hexachloroethane	0.58726	0.53095		A		0.497390		12.48600
Hexane	0.38529	0.42727		A		0.401740		7.57373
2-Hexanone	12919854	13417		L	0.000000	2.554440		0.99946

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

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SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-027

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14912343	16186		Q	0.000000	3.603130	-0.175140	0.99854
1,3,5-Trimethylbenzene	14769233	15047		Q	0.000000	3.492000	-0.162190	0.99888
Vinyl Acetate	1076799	1354		Q	0.000000	0.055210	0.001550	0.99999
Vinyl Chloride **	5003913			L	0.000000	3.328000		0.99895
o-Xylene	9575307	9773		Q	0.000000	1.152210	0.046670	0.99993
mp-Xylene	1.12023	1.00566		A		1.160850		14.29601
4-Bromofluorobenzene		9785		L	0.000000	1.216410		0.99960
Dibromofluoromethane				A		0.307320		8.70339
1,2-Dichloroethane-d4	4970938			L	0.000000	3.315890		0.99971
Toluene-d8				A		2.394470		4.81125

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2173978

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-027

Lab File ID: 15050663.D Lab Sample ID: 2173978

Date Analyzed: 5/6/2015 Time Analyzed: 21:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2173979(LCS)	2173979	15050664.D	21:22
TB-043015	2068168001	15050666.D	21:56
MRC-MW-95B-043015	2068168003	15050668.D	22:30
MRC-MW-94B-043015	2068168004	15050669.D	22:47

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-027

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.33	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-027

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-027

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2173978(MB)	87.9	86.3	96.5	95.4	0
02	2173979(LCS)	83.8	80.8	87.7	90.4	0
03	TB-043015	89.9	86.3	97.3	98.0	0
04	MRC-MW-95B-043015	85.5	88.6	101	96.6	0
05	MRC-MW-94B-043015	87.6	92.4	104	100	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-027

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		103	103	(40-151)
Benzene	20.0		20.1	100	(80-124)
Bromochloromethane	20.0		19.3	96.6	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.6	87.8	(70-123)
Bromomethane	20.0		25.7	129	(45-148)
2-Butanone	100		99.4	99.4	(50-152)
Carbon Disulfide	20.0		16.6	83.1	(57-131)
Carbon Tetrachloride	20.0		19.1	95.7	(62-132)
Chlorobenzene	20.0		19.0	94.9	(85-117)
Chlorodibromomethane	20.0		18.0	89.9	(77-122)
Chloroethane	20.0		19.3	96.5	(51-142)
Chloroform	20.0		21.1	105	(78-122)
Chloromethane	20.0		26.2	131	(38-156)
Cyclohexane	20.0		20.3	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.0	95.2	(59-133)
1,2-Dibromoethane	20.0		18.4	91.8	(80-124)
1,2-Dichlorobenzene	20.0		18.8	94.1	(82-118)
1,3-Dichlorobenzene	20.0		19.8	99	(81-118)
1,4-Dichlorobenzene	20.0		18.5	92.6	(81-116)
Dichlorodifluoromethane	20.0		26.1	131	(17-166)
1,1-Dichloroethane	20.0		18.3	91.7	(78-124)
1,2-Dichloroethane	20.0		18.8	94	(70-133)
1,1-Dichloroethene	20.0		19.9	99.4	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	93.9	(78-125)
trans-1,2-Dichloroethen	20.0		21.2	106	(71-122)
1,2-Dichloropropane	20.0		18.8	94.2	(81-127)
cis-1,3-Dichloropropene	20.0		18.3	91.5	(81-121)
trans-1,3-Dichloroprope	20.0		19.6	98	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-027

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		495	98.9	(1-280)
Ethylbenzene	20.0		19.8	99	(80-124)
Freon 113	20.0		18.2	90.9	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		19.5	97.4	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90	(69-115)
4-Methyl-2-Pentanone(MI	100		81.6	81.6	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		17.2	86.2	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.7	88.5	(74-135)
Tetrachloroethene	20.0		18.1	90.7	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.1	85.6	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84	(67-123)
1,1,1-Trichloroethane	20.0		18.5	92.4	(66-130)
1,1,2-Trichloroethane	20.0		18.0	89.8	(82-126)
Trichloroethene	20.0		19.3	96.4	(77-124)
Trichlorofluoromethane	20.0		19.4	97	(38-123)
Vinyl Chloride	20.0		23.4	117	(27-138)
o-Xylene	20.0		18.4	92.1	(79-124)
mp-Xylene	40.0		43.8	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-027

Lab File ID: 15050657.D Date Analyzed: 5/6/2015

Instrument ID: ms15.i Time Analyzed: 19:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	976495	5.913	866637	7.686	2355608	3.910
UPPER LIMIT	1952990	6.413	1733274	8.186	4711216	4.410
LOWER LIMIT	488248	5.413	433319	7.186	1177804	3.410
SAMPLE NO.						
2173978(MB)	752321	5.912	603856	7.686	1965746	3.910
2173979(LCS)	926739	5.913	855915	7.686	2195905	3.910
TB-043015	719967	5.913	572440	7.686	1952514	3.910
MRC-MW-95B-043015	692816	5.912	554482	7.686	1846589	3.910
MRC-MW-94B-043015	676450	5.913	550136	7.686	1809174	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

1,4-Dioxane by 522 Summary Forms

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 0921

Lab File ID: 12050501 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.28e-003	3.5e-003	1.3620085	0.00001	-6.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6280914	0.6280914	0.00001	-11.78	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 1522

Lab File ID: 12050515 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.63e-002	5.e-002	1.3774356	0.00001	-7.40	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6411731	0.6411731	0.00001	-9.95	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Lab File ID: 12050502 Lab Sample ID: 2172660

Instrument ID: MS12 Date Extracted: 05/04/15

Matrix: (soil/water) WATER Date Analyzed: 05/05/15

Level:(low/med) LOW Time Analyzed: 0946

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172661LCSLO	2172661	12050503	05/05/15
02	EXT-MW06-043	2068168002	12050524	05/05/15
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
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26				
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30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Matrix: (soil/water) WATER Lab Sample ID: 2172660

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050502

Level: (low/med) LOW Date Received: 05/04/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/04/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/05/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172660	81								0
02	2172661LCSLO	83								0
03	EXT-MW06-043	81								0
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

Matrix Spike - Sample No.: 2172661LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0666911	95	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: ZB-625

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050501 Time Analyzed: 0921

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	45530	6.36				
	UPPER LIMIT	59189	6.86				
	LOWER LIMIT	31871	5.86				
	SAMPLE NO.						
01	2172660	51731	6.36				
02	2172661LCSLO	51274	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050515 Time Analyzed: 1522

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49202	6.36				
	UPPER LIMIT	63963	6.86				
	LOWER LIMIT	34441	5.86				
	SAMPLE NO.						
01	EXT-MW06-043	52987	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/05/15	0921	8.38			
02	2172660	2172660	05/05/15	0946	8.38			
03	2172661LCSLO	2172661	05/05/15	1013	8.36			
04	MIDCHECK-5	MIDCHECK-5	05/05/15	1522	8.38			
05	EXT-MW06-043	2068168002	05/05/15	1913	8.36			
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM027

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1000	1000	08/13/14	1534		
02	1234	1234	08/13/14	1643	8.38	
03	1235	1235	08/13/14	1713	8.36	
04	1236	1236	08/13/14	1742	8.38	
05	1237	1237	08/13/14	1814	8.38	
06	1238	1238	08/13/14	1845	8.38	
07	1239	1239	08/13/14	1918	8.38	
08	1240	1240	08/13/14	1950	8.38	
09	1241	1241	08/13/14	2018	8.36	
10	1242	1242	08/13/14	2046	8.38	
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Arsenic	0.1015	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Barium	0.0990	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Beryllium	0.1029	0.1000	103		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cadmium	0.0987	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Chromium	0.1044	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Cobalt	0.1035	0.1000	104		90 - 110	M	5/4/2015	23:58	B050415C 2
	Copper	0.1052	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Lead	0.0999	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Manganese	0.1047	0.1000	105		90 - 110	M	5/4/2015	23:58	B050415C 2
	Molybdenum	0.1010	0.1000	101		90 - 110	M	5/4/2015	23:58	B050415C 2
	Nickel	0.1005	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Selenium	0.1017	0.1000	102		90 - 110	M	5/4/2015	23:58	B050415C 2
	Silver	0.1004	0.1000	100		90 - 110	M	5/4/2015	23:58	B050415C 2
	Thallium	0.0989	0.1000	99		90 - 110	M	5/4/2015	23:58	B050415C 2
	Vanadium	0.1067	0.1000	107		90 - 110	M	5/4/2015	23:58	B050415C 2
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	00:06	B050415C 2
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/5/2015	00:06	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Cobalt	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Copper	0.0055	0.0050	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2
	Nickel	0.0052	0.0050	104		70 - 130	M	5/5/2015	00:06	B050415C 2
	Selenium	0.0050	0.0050	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	00:06	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	00:06	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	00:06	B050415C 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1024	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Arsenic	0.1023	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Barium	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Beryllium	0.0976	0.1000	98		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cadmium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Cobalt	0.1018	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Copper	0.1025	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Manganese	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:00	B050415C 2
	Molybdenum	0.1017	0.1000	102		90 - 110	M	5/5/2015	01:00	B050415C 2
	Nickel	0.0986	0.1000	99		90 - 110	M	5/5/2015	01:00	B050415C 2
	Selenium	0.1035	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
	Silver	0.1007	0.1000	101		90 - 110	M	5/5/2015	01:00	B050415C 2
	Thallium	0.1004	0.1000	100		90 - 110	M	5/5/2015	01:00	B050415C 2
	Vanadium	0.1039	0.1000	104		90 - 110	M	5/5/2015	01:00	B050415C 2
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/5/2015	01:07	B050415C 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Chromium	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:07	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Manganese	0.0052	0.0050	104		70 - 130	M	5/5/2015	01:07	B050415C 2
	Molybdenum	0.0023	0.0020	115		70 - 130	M	5/5/2015	01:07	B050415C 2
	Nickel	0.0050	0.0050	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Selenium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:07	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:07	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:07	B050415C 2
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/5/2015	01:07	B050415C 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1012	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Arsenic	0.1026	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Barium	0.0987	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Beryllium	0.1031	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cadmium	0.0991	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Chromium	0.1034	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/5/2015	01:47	B050415C 2
	Copper	0.1036	0.1000	104		90 - 110	M	5/5/2015	01:47	B050415C 2
	Lead	0.1015	0.1000	102		90 - 110	M	5/5/2015	01:47	B050415C 2
	Manganese	0.1052	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
	Molybdenum	0.0992	0.1000	99		90 - 110	M	5/5/2015	01:47	B050415C 2
	Nickel	0.0975	0.1000	98		90 - 110	M	5/5/2015	01:47	B050415C 2
	Selenium	0.1009	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Silver	0.1011	0.1000	101		90 - 110	M	5/5/2015	01:47	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	01:47	B050415C 2
	Vanadium	0.1047	0.1000	105		90 - 110	M	5/5/2015	01:47	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	01:54	B050415C 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Chromium	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Cobalt	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/5/2015	01:54	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/5/2015	01:54	B050415C 2
	Selenium	0.0049	0.0050	98		70 - 130	M	5/5/2015	01:54	B050415C 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/5/2015	01:54	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	01:54	B050415C 2
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/5/2015	01:54	B050415C 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Arsenic	0.1017	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Barium	0.0983	0.1000	98		90 - 110	M	5/5/2015	02:34	B050415C 2
	Beryllium	0.1007	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cadmium	0.0969	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Chromium	0.1024	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Cobalt	0.1020	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Copper	0.1018	0.1000	102		90 - 110	M	5/5/2015	02:34	B050415C 2
	Lead	0.1013	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Manganese	0.1054	0.1000	105		90 - 110	M	5/5/2015	02:34	B050415C 2
	Molybdenum	0.0974	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Nickel	0.0968	0.1000	97		90 - 110	M	5/5/2015	02:34	B050415C 2
	Selenium	0.1011	0.1000	101		90 - 110	M	5/5/2015	02:34	B050415C 2
	Silver	0.1000	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Thallium	0.1002	0.1000	100		90 - 110	M	5/5/2015	02:34	B050415C 2
	Vanadium	0.1043	0.1000	104		90 - 110	M	5/5/2015	02:34	B050415C 2
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/5/2015	02:41	B050415C 2
	Arsenic	0.0028	0.0030	93		70 - 130	M	5/5/2015	02:41	B050415C 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/5/2015	02:41	B050415C 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Chromium	0.0022	0.0020	110		70 - 130	M	5/5/2015	02:41	B050415C 2
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Copper	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Lead	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Manganese	0.0053	0.0050	106		70 - 130	M	5/5/2015	02:41	B050415C 2
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2
	Nickel	0.0049	0.0050	98		70 - 130	M	5/5/2015	02:41	B050415C 2
	Selenium	0.0054	0.0050	108		70 - 130	M	5/5/2015	02:41	B050415C 2
	Silver	0.0020	0.0020	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Thallium	0.0010	0.0010	100		70 - 130	M	5/5/2015	02:41	B050415C 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/5/2015	02:41	B050415C 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	00:02	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	00:02	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	00:02	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Molybdenum	0.0012	J	0.00070	0.0007	0.0050	M	5/5/2015	00:02	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	00:02	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	00:02	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	00:02	B050415C 233
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:03	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:03	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:03	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Molybdenum	0.0009	J	0.00070	0.0007	0.0050	M	5/5/2015	01:03	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:03	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:03	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:03	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	01:50	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	01:50	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	01:50	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	01:50	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	01:50	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	01:50	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	01:50	B050415C 233

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/5/2015	02:37	B050415C 233
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/5/2015	02:37	B050415C 233
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/5/2015	02:37	B050415C 233
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	5/5/2015	02:37	B050415C 233
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/5/2015	02:37	B050415C 233
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/5/2015	02:37	B050415C 233
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/5/2015	02:37	B050415C 233

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2172597			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	5/5/2015	01:11	B050415C 2333
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	5/5/2015	01:11	B050415C 2333
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	5/5/2015	01:11	B050415C 2333
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	5/5/2015	01:11	B050415C 2333
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	5/5/2015	01:11	B050415C 2333
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	5/5/2015	01:11	B050415C 2333
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	5/5/2015	01:11	B050415C 2333

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Arsenic	0.0002				-0.00300 - -0.00300	5/5/2015	00:09	B050415C 233
	Barium	0.0003				-0.01000 - -0.01000	5/5/2015	00:09	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Cadmium	0.0008				-0.00100 - -0.00100	5/5/2015	00:09	B050415C 233
	Chromium	0.0006				-0.00400 - -0.00400	5/5/2015	00:09	B050415C 233
	Cobalt	0.0006				-0.00600 - -0.00600	5/5/2015	00:09	B050415C 233
	Copper	0.0010				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Lead	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
	Manganese	0.0013				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Molybdenum	1.8980	2.00000	95		80 - 120%	5/5/2015	00:09	B050415C 233
	Nickel	0.0006				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Selenium	0.0001				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Silver	0.0004				-0.00500 - -0.00500	5/5/2015	00:09	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:09	B050415C 233
	Vanadium	0.0001				-0.00200 - -0.00200	5/5/2015	00:09	B050415C 233
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Arsenic	0.0195	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Barium	0.0004				-0.00500 - -0.00500	5/5/2015	00:13	B050415C 233
	Beryllium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Cadmium	0.0095	0.01000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Chromium	0.0196	0.02000	98		80 - 120%	5/5/2015	00:13	B050415C 233
	Cobalt	0.0364	0.04000	91		80 - 120%	5/5/2015	00:13	B050415C 233
	Copper	0.0190	0.02000	95		80 - 120%	5/5/2015	00:13	B050415C 233
	Lead	0.0002				-0.00200 - -0.00200	5/5/2015	00:13	B050415C 233
	Manganese	0.0204	0.02000	102		80 - 120%	5/5/2015	00:13	B050415C 233
	Molybdenum	1.9141	2.00000	96		80 - 120%	5/5/2015	00:13	B050415C 233
	Nickel	0.0350	0.04000	88		80 - 120%	5/5/2015	00:13	B050415C 233
	Selenium	0.0183	0.02000	92		80 - 120%	5/5/2015	00:13	B050415C 233
	Silver	0.0188	0.02000	94		80 - 120%	5/5/2015	00:13	B050415C 233
	Thallium	0.00002				-0.001000 - -0.001000	5/5/2015	00:13	B050415C 233
	Vanadium	0.0406	0.04000	102		80 - 120%	5/5/2015	00:13	B050415C 233

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2172598									
	Antimony	mg/L	0.2220	0.2265		102		80 - 120	M
	Arsenic	mg/L	0.2220	0.2137		96		80 - 120	M
	Barium	mg/L	2.2220	2.1426		96		80 - 120	M
	Beryllium	mg/L	0.2220	0.2109		95		80 - 120	M
	Cadmium	mg/L	0.2220	0.2126		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2194		99		80 - 120	M
	Cobalt	mg/L	0.2220	0.2177		98		80 - 120	M
	Copper	mg/L	0.2220	0.2166		98		80 - 120	M
	Lead	mg/L	0.2220	0.2240		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2239		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2297		103		80 - 120	M
	Nickel	mg/L	0.2220	0.2126		96		80 - 120	M
	Selenium	mg/L	0.2220	0.2035		92		80 - 120	M
	Silver	mg/L	0.1110	0.1182		106		80 - 120	M
	Thallium	mg/L	0.2220	0.2170		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2198		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-027
Contract: TMM027|112IC06247 **Lab Code:** CAS
Method: MS
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70825						
2172597	MB for HBN 70825 [MDIG/50655	MB	QC-WAT	5/4/15	45.0	50.0	
2172598	LCS for HBN 70825 [MDIG/50655	LCS	QC-WAT	5/4/15	45.0	50.0	
2068168005	MRC-MW-04B-043015	SAM	WATER	5/4/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2333																										
BLK	1.00	2337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2340			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2344			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2348			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2351			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2355			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2358			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0002			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0006			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0009			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0013			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0017																										
ZZZZZZ	1.00	0020																										
ZZZZZZ	5.00	0024																										
ZZZZZZ	5.00	0028																										
ZZZZZZ	5.00	0031																										
ZZZZZZ	5.00	0035																										
ZZZZZZ	5.00	0039																										
ZZZZZZ	5.00	0042																										
ZZZZZZ	5.00	0046																										
ZZZZZZ	5.00	0049																										
ZZZZZZ	5.00	0053																										
ZZZZZZ	5.00	0056																										
CCV1	1.00	0100			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0103			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0107			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172597	1.00	0111			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2172598	1.00	0114			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0118																										
ZZZZZZ	5.00	0121																										
ZZZZZZ	1.00	0125																										
ZZZZZZ	1.00	0129																										
ZZZZZZ	1.00	0132																										
ZZZZZZ	1.00	0136																										
ZZZZZZ	1.00	0139																										

6020 3015
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0143																										
CCV2	1.00	0147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0150			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0154			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0158																										
ZZZZZZ	1.00	0201																										
ZZZZZZ	1.00	0205																										
ZZZZZZ	1.00	0208																										
ZZZZZZ	5.00	0212																										
ZZZZZZ	5.00	0216																										
ZZZZZZ	5.00	0219																										
2068168005	1.00	0223			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0227																										
ZZZZZZ	1.00	0230																										
CCV3	1.00	0234			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	0237			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0241			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0245																										
ZZZZZZ	1.00	0248																										
ZZZZZZ	1.00	0252																										
ZZZZZZ	1.00	0256																										
ZZZZZZ	1.00	0259																										
ZZZZZZ	1.00	0303																										
ZZZZZZ	5.00	0307																										
ZZZZZZ	1.00	0310																										
ZZZZZZ	1.00	0314																										
ZZZZZZ	1.00	0317																										
ZZZZZZ	1.00	0321																										
ZZZZZZ	1.00	0325																										
ZZZZZZ	1.00	0328																										
ZZZZZZ	1.00	0332																										
ZZZZZZ	1.00	0336																										
ZZZZZZ	1.00	0339																										
ZZZZZZ	1.00	0343																										
ZZZZZZ	1.00	0347																										
ZZZZZZ	1.00	0351																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0354																								
ZZZZZZ	1.00	0358																								
ZZZZZZ	1.00	0402																								
ZZZZZZ	1.00	0405																								
ZZZZZZ	1.00	0409																								
ZZZZZZ	1.00	0412																								
ZZZZZZ	1.00	0416																								
ZZZZZZ	1.00	0420																								
ZZZZZZ	1.00	0424																								
ZZZZZZ	1.00	0427																								
ZZZZZZ	10.00	0431																								
ZZZZZZ	10.00	0435																								
ZZZZZZ	1.00	0439																								
ZZZZZZ	1.00	0443																								
ZZZZZZ	1.00	0447																								
ZZZZZZ	1.00	0450																								

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-027

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B050415C 233

Start Date: 5/4/2015 End Date: 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:33																									
BLK	1.00	23:37					X																				
STANDARD 1	1.00	23:40					X																				
STANDARD 2	1.00	23:44					X																				
STANDARD 3	1.00	23:48					X																				
STANDARD 4	1.00	23:51					X																				
STANDARD 5	1.00	23:55					X																				
ICV	1.00	23:58					X																				
ICB1	1.00	00:02					X																				
LLICV	1.00	00:06					X																				
ICS-A1	1.00	00:09					X																				
ICS-AB1	1.00	00:13					X																				
ZZZZZZ	1.00	00:17																									
ZZZZZZ	1.00	00:20																									
ZZZZZZ	5.00	00:24																									
ZZZZZZ	5.00	00:28																									
ZZZZZZ	5.00	00:31																									
ZZZZZZ	5.00	00:35																									
ZZZZZZ	5.00	00:39																									
ZZZZZZ	5.00	00:42																									
ZZZZZZ	5.00	00:46																									
ZZZZZZ	5.00	00:49																									
ZZZZZZ	5.00	00:53																									
ZZZZZZ	5.00	00:56																									
CCV1	1.00	01:00					X																				
CCB1	1.00	01:03					X																				
LLCCV	1.00	01:07					X																				
2172597	1.00	01:11					X																				
2172598	1.00	01:14					X																				
ZZZZZZ	1.00	01:18																									
ZZZZZZ	5.00	01:21																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM027|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-027

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	01:25																									
ZZZZZZ	1.00	01:29																									
ZZZZZZ	1.00	01:32																									
ZZZZZZ	1.00	01:36																									
ZZZZZZ	1.00	01:39																									
ZZZZZZ	1.00	01:43																									
CCV2	1.00	01:47					X																				
CCB2	1.00	01:50					X																				
LLCCV	1.00	01:54					X																				
ZZZZZZ	1.00	01:58																									
ZZZZZZ	1.00	02:01																									
ZZZZZZ	1.00	02:05																									
ZZZZZZ	1.00	02:08																									
ZZZZZZ	5.00	02:12																									
ZZZZZZ	5.00	02:16																									
ZZZZZZ	5.00	02:19																									
2068168005	1.00	02:23					X																				
ZZZZZZ	1.00	02:27																									
ZZZZZZ	1.00	02:30																									
CCV3	1.00	02:34					X																				
CCB3	1.00	02:37					X																				
LLCCV	1.00	02:41					X																				
ZZZZZZ	1.00	02:45																									
ZZZZZZ	1.00	02:48																									
ZZZZZZ	1.00	02:52																									
ZZZZZZ	1.00	02:56																									
ZZZZZZ	1.00	02:59																									
ZZZZZZ	1.00	03:03																									
ZZZZZZ	5.00	03:07																									
ZZZZZZ	1.00	03:10																									
ZZZZZZ	1.00	03:14																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM027|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-027

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B050415C 233

Start Date: 5/4/2015 **End Date:** 5/5/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	03:17																									
ZZZZZZ	1.00	03:21																									
ZZZZZZ	1.00	03:25																									
ZZZZZZ	1.00	03:28																									
ZZZZZZ	1.00	03:32																									
ZZZZZZ	1.00	03:36																									
ZZZZZZ	1.00	03:39																									
ZZZZZZ	1.00	03:43																									
ZZZZZZ	1.00	03:47																									
ZZZZZZ	1.00	03:51																									
ZZZZZZ	1.00	03:54																									
ZZZZZZ	1.00	03:58																									
ZZZZZZ	1.00	04:02																									
ZZZZZZ	1.00	04:05																									
ZZZZZZ	1.00	04:09																									
ZZZZZZ	1.00	04:12																									
ZZZZZZ	1.00	04:16																									
ZZZZZZ	1.00	04:20																									
ZZZZZZ	1.00	04:24																									
ZZZZZZ	1.00	04:27																									
ZZZZZZ	10.00	04:31																									
ZZZZZZ	10.00	04:35																									
ZZZZZZ	1.00	04:39																									
ZZZZZZ	1.00	04:43																									
ZZZZZZ	1.00	04:47																									
ZZZZZZ	1.00	04:50																									

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-027

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2333												
BLK	BLK	2337	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2340	100		112		100		100		101		101	
STANDARD 2	STANDARD 2	2344	100		98		100		100		100		100	
STANDARD 3	STANDARD 3	2348	102		103		102		102		102		102	
STANDARD 4	STANDARD 4	2351	99		98		100		101		99		101	
STANDARD 5	STANDARD 5	2355	103		111		104		105		103		103	
ICV	ICV	2358	101		97		101		101		100		100	
ICB1	ICB	0002	101		111		101		102		101		102	
LLICV	LLICV	0006	100		98		100		101		100		100	
ICS-A1	ICSA	0009	92		111		95		102		101		104	
ICS-AB1	ICSAB	0013	96		100		97		101		100		103	
CHECK	ZZZZZZ	0017												
CHECK	ZZZZZZ	0020												
2171997	ZZZZZZ	0024												
2171998	ZZZZZZ	0028												
2068070004	ZZZZZZ	0031												
2068070005	ZZZZZZ	0035												
2068070006	ZZZZZZ	0039												
2068297001	ZZZZZZ	0042												
2068298001	ZZZZZZ	0046												
2171999	ZZZZZZ	0049												
2172000	ZZZZZZ	0053												
2068298001P	ZZZZZZ	0056												
CCV1	CCV	0100	107		103		106		106		101		101	
CCB1	CCB	0103	104		101		102		101		98		101	
LLCCV	LLCCV	0107	107		111		106		106		102		103	
2172597	MB for HBN 70825	0111	103		151	*	103		103		100		102	
2172598	LCS for HBN 7082	0114	103		153	*	101		103		98		100	
2068120002	ZZZZZZ	0118												
2068120002L	ZZZZZZ	0121												
2068120002P	ZZZZZZ	0125												
2068120003	ZZZZZZ	0129												
2068120004	ZZZZZZ	0132												
2068120005	ZZZZZZ	0136												
2068120006	ZZZZZZ	0139												
2068120007	ZZZZZZ	0143												
CCV2	CCV	0147	107		106		104		104		97		98	
CCB2	CCB	0150	105		105		102		102		96		97	
LLCCV	LLCCV	0154	105		99		103		102		96		95	
2068120008	ZZZZZZ	0158												
2068120009	ZZZZZZ	0201												
2068120010	ZZZZZZ	0205												
2068120011	ZZZZZZ	0208												

*Ge was not used as an IS for this analytical run.

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-027

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068120005	ZZZZZZ	0212												
2068120007	ZZZZZZ	0216												
2068120009	ZZZZZZ	0219												
2068168005	MRC-MW-04B-04301	0223	73		246	*	80		90		97		97	
2068377002	ZZZZZZ	0227												
2068377004	ZZZZZZ	0230												
CCV3	CCV	0234	114		111		113		112		107		109	
CCB3	CCB	0237	112		109		110		109		103		104	
LLCCV	LLCCV	0241	111		107		108		107		103		102	
2067773001	ZZZZZZ	0245												
2067773001S	ZZZZZZ	0248												
2067773001S	ZZZZZZ	0252												
2068256001	ZZZZZZ	0256												
2068256002	ZZZZZZ	0259												
2068256003	ZZZZZZ	0303												
2068377002	ZZZZZZ	0307												
CHECK	ZZZZZZ	0310												
CCV4	ZZZZZZ	0314												
CCB4	ZZZZZZ	0317												
LLCCV	ZZZZZZ	0321												
2067944001	ZZZZZZ	0325												
2172300	ZZZZZZ	0328												
2067905001	ZZZZZZ	0332												
2067924001	ZZZZZZ	0336												
2067924002	ZZZZZZ	0339												
2067924003	ZZZZZZ	0343												
2172303	ZZZZZZ	0347												
2172304	ZZZZZZ	0351												
2067924004	ZZZZZZ	0354												
2067924005	ZZZZZZ	0358												
CCV5	ZZZZZZ	0402												
CCB5	ZZZZZZ	0405												
2068062001	ZZZZZZ	0409												
2068094001	ZZZZZZ	0412												
2068152001	ZZZZZZ	0416												
2068183001	ZZZZZZ	0420												
2068185001	ZZZZZZ	0424												
2068235001	ZZZZZZ	0427												
2068390001	ZZZZZZ	0431												
2068390002	ZZZZZZ	0435												
2068390002	ZZZZZZ	0439												
2172427	ZZZZZZ	0443												
CCV6	ZZZZZZ	0447												
CCB6	ZZZZZZ	0450												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-027

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2333												
BLK	2337	100											
STANDARD 1	2340	100											
STANDARD 2	2344	99											
STANDARD 3	2348	102											
STANDARD 4	2351	99											
STANDARD 5	2355	103											
ICV	2358	100											
ICB	0002	101											
LLICV	0006	99											
ICSA	0009	99											
ICSAB	0013	100											
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0028												
ZZZZZZ	0031												
ZZZZZZ	0035												
ZZZZZZ	0039												
ZZZZZZ	0042												
ZZZZZZ	0046												
ZZZZZZ	0049												
ZZZZZZ	0053												
ZZZZZZ	0056												
CCV	0100	108											
CCB	0103	102											
LLCCV	0107	105											
MB for HBN 70825	0111	105											
LCS for HBN 7082	0114	104											
ZZZZZZ	0118												
ZZZZZZ	0121												
ZZZZZZ	0125												
ZZZZZZ	0129												
ZZZZZZ	0132												
ZZZZZZ	0136												
ZZZZZZ	0139												
ZZZZZZ	0143												
CCV	0147	106											
CCB	0150	104											
LLCCV	0154	104											
ZZZZZZ	0158												
ZZZZZZ	0201												
ZZZZZZ	0205												
ZZZZZZ	0208												
ZZZZZZ	0212												

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-027

ICP-MS Instrument ID: AGILENT 77002 ICPMS Start Date: 05/04/2015 End Date: 05/05/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0216												
ZZZZZZ	0219												
MRC-MW-04B-04301	0223	84											
ZZZZZZ	0227												
ZZZZZZ	0230												
CCV	0234	114											
CCB	0237	111											
LLCCV	0241	111											
ZZZZZZ	0245												
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
ZZZZZZ	0307												
ZZZZZZ	0310												
ZZZZZZ	0314												
ZZZZZZ	0317												
ZZZZZZ	0321												
ZZZZZZ	0325												
ZZZZZZ	0328												
ZZZZZZ	0332												
ZZZZZZ	0336												
ZZZZZZ	0339												
ZZZZZZ	0343												
ZZZZZZ	0347												
ZZZZZZ	0351												
ZZZZZZ	0354												
ZZZZZZ	0358												
ZZZZZZ	0402												
ZZZZZZ	0405												
ZZZZZZ	0409												
ZZZZZZ	0412												
ZZZZZZ	0416												
ZZZZZZ	0420												
ZZZZZZ	0424												
ZZZZZZ	0427												
ZZZZZZ	0431												
ZZZZZZ	0435												
ZZZZZZ	0439												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0450												

Sample Report

Sample Table

Sample Name	2068168005
Data File Name	048SMPL.d
Data Path Name	E:\Data\B050415C.b
Acq Date Time	2015-05-05T02:23:29-04:00
Sample Type	Sample
Dilution	1
Comment	48233 ZMC
ISTD Ref FileName	002CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail
Vial	3301

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
V	51	1	No Gas	0.548	0.548	4.59	12856	0.00	1000	
Cr	52	1	No Gas	1.286	1.286	3.39	41891	0.00	1000	
Mn	55	1	No Gas	1844.063	1844.063	0.53	49038252	0.00	1000	>LDR
Co	59	1	No Gas	103.695	103.695	0.97	2486791	0.00	1000	
Ni	60	1	No Gas	122.267	122.267	1.05	671662	0.02	1000	
Cu	63	1	No Gas	39.259	39.259	1.59	508330	0.01	1000	
Sr	88	1	No Gas	1411.842	1411.842	2.12	40359284	0.00	1000	>LDR
Ag	107	1	No Gas	0.086	0.086	8.04	1167	0.01	1000	
Al	27	1	No Gas	98.474	98.474	4.03	1591178	0.01	100000	
Sn	118	1	No Gas	0.321	0.321	3.82	2500	0.01	100	
Ti	47	1	No Gas	1.416	1.416	8.78	2743	0.05	2000	
Zn	66	1	No Gas	35.640	35.640	1.85	112052	0.03	1000	
As	75	3	HeHe	0.395	0.395	13.11	169	0.23	1000	
As	75	1	No Gas	2.859	2.859	50.84	22156	0.01	1000	
Sb	121	1	No Gas	0.132	0.132	2.88	1427	0.01	100	
Hg	201	1	No Gas	0.059	0.059	27.16	87	0.07	4	
Be	9	1	No Gas	0.066	0.066	2.95	233	0.03	1000	
Pb	208	1	No Gas	0.214	0.214	4.68	6438	0.00	1000	
Se	82	1	No Gas	-1.839	-1.839	-50.83	-242	0.76	1000	
Mo	98	1	No Gas	1.550	1.550	2.41	12800	0.01	2000	
Ba	137	1	No Gas	369.452	369.452	1.77	1373534	0.03	1000	
Tl	205	1	No Gas	0.328	0.328	5.99	7135	0.00	1000	
U	238	1	No Gas	0.909	0.909	2.78	29615	0.00	1000	
Na	23	2	he	OR	OR	#VALUE!	OR	#VALUE!	100000	
Mg	24	2	he	69705.777	69705.777	1.00	100833533	0.07	100000	
K	39	2	he	29370.813	29370.813	0.92	56819438	0.05	100000	
Se	82	3	HeHe	1.087	1.087	33.55	49	2.24	1000	
Se	78	1	No Gas	4.673	4.673	5.93	15686	0.03	100	
Cd	114	1	No Gas	1.269	1.269	3.51	7532	0.02	1000	
Ca	44	1	No Gas	249812.333	249812.333	1.53	132663641	0.19	100000	>LDR
B	11	1	No Gas	100.041	100.041	3.45	208694	0.05	2000	
Fe	56	3	HeHe	355.599	355.599	1.09	1316054	0.03	100000	
Kr	84	1	No Gas	11923.028	11923.028	2.39	258483	4.61	100	>LDR
Se	78	3	HeHe	0.739	0.739	35.51	38	1.95	100	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Sc	45	1	No Gas	4026152	1.17	4474193	89.99	70	120	
Sc	45	2	he	926440	1.18	954814	97.03	70	120	
Ge	72	1	No Gas	1237173	13.16	504016	245.46	70	120	ISTD Failed
In	115	1	No Gas	2330443	1.92	2921000	79.78	70	120	
Tb	159	1	No Gas	3384933	0.48	4028818	84.02	70	120	
Bi	209	1	No Gas	1874236	1.09	2578806	72.68	70	120	
Sc	45	3	HeHe	145478	1.09	150817	96.46	70	120	

Total Metals by 6010C Summary Forms

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.990	1.000	99		90 - 110	P	5/4/2015	09:12	050415 3015
CCV	Iron	2.507	2.500	100		90 - 110	P	5/4/2015	09:22	050415 3015
CCV	Iron	2.458	2.500	98		90 - 110	P	5/4/2015	11:34	050415 3015
LLCCV	Iron	0.059	0.060	98		70 - 130	P	5/4/2015	11:40	050415 3015
CCV	Iron	2.489	2.500	100		90 - 110	P	5/4/2015	12:25	050415 3015
CCV	Iron	2.441	2.500	98		90 - 110	P	5/4/2015	13:02	050415 3015
CCV	Iron	2.481	2.500	99		90 - 110	P	5/4/2015	13:40	050415 3015
LLCCV	Iron	0.058	0.060	97		70 - 130	P	5/4/2015	13:58	050415 3015

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.058	0.060	97		70 - 130	P	5/4/2015	09:19	050415 301

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	09:16	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	11:37	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	12:27	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	13:05	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	13:43	050415 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2172593			**QC-WATER**								
	Iron	0.026	J		0.067	0.022	0.067	P	5/4/2015	11:54	050415 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	111.0	125.0	89		80 - 120%	5/4/2015	09:36	050415 3015
ICSAB									
	Iron	111.5	125.0	89		80 - 120%	5/4/2015	09:39	050415 3015
ICSA									
	Iron	101.4	125.0	81		80 - 120%	5/4/2015	11:44	050415 3015
ICSAB									
	Iron	106.3	125.0	85		80 - 120%	5/4/2015	11:47	050415 3015
ICSAB									
	Iron	105.5	125.0	84		80 - 120%	5/4/2015	14:05	050415 3015
ICSA									
	Iron	109.4	125.0	88		80 - 120%	5/4/2015	14:08	050415 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2172594									
	Iron	mg/L	1.11	1.239		112		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-027
Contract: TMM027|112IC06247 **Lab Code:** CAS
Method: P
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70824						
2172593	MB for HBN 70824 [MDIG/50654	MB	QC-WAT	5/4/15	45.0	50.0	
2172594	LCS for HBN 70824 [MDIG/50654	LCS	QC-WAT	5/4/15	45.0	50.0	
2068168005	MRC-MW-04B-043015	SAM	WATER	5/4/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0853												X													
ICAL2	1.00	0856												X													
ICAL3	1.00	0900												X													
ICAL4	1.00	0903												X													
ICAL5	1.00	0906												X													
ZZZZZZ	1.00	0908																									
ICV2	1.00	0912												X													
ICB1	1.00	0916												X													
CRDL1	1.00	0919												X													
CCV1	1.00	0922												X													
HIGH	1.00	0925												X													
ZZZZZZ	1.00	0928																									
ZZZZZZ	1.00	0931																									
ICS-A2	1.00	0936												X													
ICS-AB2	1.00	0939												X													
ZZZZZZ	1.00	0945																									
ZZZZZZ	1.00	0948																									
ZZZZZZ	1.00	0951																									
ZZZZZZ	1.00	0954																									
ZZZZZZ	1.00	0957																									
ZZZZZZ	5.00	1000																									
ZZZZZZ	5.00	1003																									
ZZZZZZ	5.00	1007																									
ZZZZZZ	5.00	1010																									
ZZZZZZ	5.00	1013																									
ZZZZZZ	1.00	1016																									
ZZZZZZ	1.00	1019																									
ZZZZZZ	5.00	1022																									
ZZZZZZ	5.00	1025																									
ZZZZZZ	5.00	1029																									
ZZZZZZ	5.00	1032																									
ZZZZZZ	5.00	1035																									
ZZZZZZ	5.00	1038																									
ZZZZZZ	5.00	1041																									
ZZZZZZ	5.00	1044																									
ZZZZZZ	5.00	1048																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1051																									
ZZZZZZ	1.00	1054																									
ZZZZZZ	1.00	1057																									
ZZZZZZ	5.00	1100																									
ZZZZZZ	5.00	1103																									
ZZZZZZ	1.00	1107																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1116																									
ZZZZZZ	5.00	1120																									
ZZZZZZ	1.00	1131																									
CCV4	1.00	1134											X														
CCB3	1.00	1137											X														
LLCCV	1.00	1140											X														
ICS-A3	1.00	1144											X														
ICS-AB3	1.00	1147											X														
2172593	1.00	1154											X														
2172594	1.00	1157											X														
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1203																									
ZZZZZZ	1.00	1206																									
ZZZZZZ	1.00	1209																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1218																									
ZZZZZZ	1.00	1221																									
CCV5	1.00	1225											X														
CCB4	1.00	1227											X														
ZZZZZZ	5.00	1231																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1237																									
ZZZZZZ	1.00	1240																									
ZZZZZZ	1.00	1243																									
ZZZZZZ	1.00	1246																									
ZZZZZZ	1.00	1250																									
ZZZZZZ	1.00	1253																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1259																									
CCV6	1.00	1302												X													
CCB5	1.00	1305												X													
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1312																									
2068168005	1.00	1315												X													
ZZZZZZ	1.00	1318																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1324																									
ZZZZZZ	1.00	1328																									
ZZZZZZ	1.00	1331																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1337																									
CCV7	1.00	1340												X													
CCB6	1.00	1343												X													
LLCCV	1.00	1358												X													
ZZZZZZ	1.00	1401																									
ICS-AB4	1.00	1405												X													
ICS-A5	1.00	1408												X													

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/7/2015	12:36	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:01	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:14	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:27	050715W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	12:37	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:02	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:15	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:28	050715W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173295			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/7/2015	13:11	050715W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173296									
	Mercury	mg/L	0.0020	0.0018		90		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-027

Contract: TMM027|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71111						
2173295	MB for HBN 71111 [MDIG/50685	MB	QC-WAT	5/7/15	25.0	25.0	
2173296	LCS for HBN 71111 [MDIG/50685	LCS	QC-WAT	5/7/15	25.0	25.0	
2068168005	MRC-MW-04B-043015	SAM	WATER	5/7/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1229																X								
Standard #1 (0.2ppb	1.00	1230																X								
	1.00	1231																X								
	1.00	1232																X								
	1.00	1233																X								
	1.00	1234																X								
ICV1	1.00	1236																X								
ICB1	1.00	1237																X								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1239																								
ZZZZZZ	1.00	1240																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
CCV2	1.00	1301																X								
CCB2	1.00	1302																X								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1306																								
ZZZZZZ	1.00	1307																								

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1308																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1310																										
2173295	1.00	1311																X										
2173296	1.00	1312																X										
ZZZZZZ	1.00	1313																										
CCV3	1.00	1314																X										
CCB3	1.00	1315																X										
ZZZZZZ	1.00	1316																										
ZZZZZZ	1.00	1318																										
ZZZZZZ	1.00	1319																										
ZZZZZZ	1.00	1320																										
ZZZZZZ	1.00	1321																										
ZZZZZZ	1.00	1322																										
2068168005	1.00	1323																X										
ZZZZZZ	1.00	1324																										
ZZZZZZ	1.00	1325																										
ZZZZZZ	1.00	1326																										
CCV4	1.00	1327																X										
CCB4	1.00	1328																X										
ZZZZZZ	1.00	1330																										
ZZZZZZ	1.00	1331																										
ZZZZZZ	1.00	1332																										
ZZZZZZ	1.00	1333																										
ZZZZZZ	1.00	1334																										
ZZZZZZ	1.00	1335																										
ZZZZZZ	1.00	1336																										
ZZZZZZ	1.00	1337																										
ZZZZZZ	1.00	1338																										
ZZZZZZ	1.00	1339																										
ZZZZZZ	1.00	1340																										
ZZZZZZ	1.00	1342																										
ZZZZZZ	1.00	1343																										
ZZZZZZ	1.00	1344																										
ZZZZZZ	1.00	1345																										
ZZZZZZ	1.00	1346																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1353																									
ZZZZZZ	1.00	1354																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1411																									
ZZZZZZ	1.00	1412																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1426																									

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1427																										
ZZZZZZ	1.00	1428																										
ZZZZZZ	1.00	1429																										
ZZZZZZ	1.00	1430																										
ZZZZZZ	1.00	1432																										
ZZZZZZ	1.00	1433																										
ZZZZZZ	1.00	1434																										
ZZZZZZ	1.00	1435																										
ZZZZZZ	1.00	1436																										
ZZZZZZ	1.00	1437																										
ZZZZZZ	1.00	1438																										
ZZZZZZ	1.00	1439																										
ZZZZZZ	1.00	1440																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1448																										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	50.00	1500																										
ZZZZZZ	50.00	1501																										
ZZZZZZ	50.00	1502																										
ZZZZZZ	50.00	1503																										
ZZZZZZ	1.00	1509																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1514																										
ZZZZZZ	1.00	1515																										
ZZZZZZ	1.00	1516																										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1519																										

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM027|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-027

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1520																								
ZZZZZZ	50.00	1521																								
ZZZZZZ	50.00	1522																								
ZZZZZZ	1.00	1525																								
ZZZZZZ	1.00	1526																								

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/OVG/TOTAL METALS/MISCELLANEOUS PARAMETERS LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) SDG 2068544**

SAMPLES:

4/Aqueous/

MRC-MW-37A-050415 MRC-MW-37B-050415 MRC-MW-37C-050415
TB-050415

Overview

The sample set for LMC-MRC, SDG 2068544 consisted of three (3) aqueous environmental samples and one (1) trip blank. All samples and the trip blank were analyzed for volatile organic compounds (VOCs). Samples MRC-MW-37A-050415 and MRC-MW-37B-050415 were analyzed for organic volatile gases (OVG) and miscellaneous parameters (alkalinity, ammonia, chloride, dissolved organic carbon, nitrate, nitrite, orthophosphate, sulfate, and total dissolved solids). Sample MRC-MW-37A-050415 was analyzed for metals. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on May 4, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, and 9060A, EPA Methods 300 and 365.3, Standard Methods 4500NH3D, 2320B, and 2540C, and RSK-175 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Major - None

Minor

- The following analytes were detected in the laboratory calibration and preparation blanks at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Alkalinity(1)	3.12	15.6
Ammonia(2)	0.090	0.45
Chloride(1)	0.15	0.75
Sulfate(1)	0.08	0.4

1 – Maximum concentration in calibration blank.
2 – Maximum concentration in preparation blank.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Carbon disulfide	0.41	2.05
1,4-Dichlorobenzene	0.33	1.65

Maximum concentration detected in the laboratory method blank 2180033 affecting all samples.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as all results were nondetects.

The following analytes were detected in the laboratory preparation blanks at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Barium	0.00273	0.014
Chromium	0.00083	0.0042

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as results were above the blank action level.

Chloride, dissolved organic carbon, nitrate, nitrite, and sulfate were analyzed at dilution. Resulting in elevated detection limits for nitrite.

Executive Summary

Laboratory Performance: Contaminants were detected in the laboratory method blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-MW-37A-050415			MRC-MW-37B-050415			MRC-MW-37C-050415			TB-050415		
SDG: 2068544	LAB_ID	2068544003			2068544002			2068544001			2068544004		
FRACTION: OV	SAMP_DATE	5/4/2015			5/4/2015			5/4/2015			5/4/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	U		58.9	U	
2-BUTANONE		1.8	UR	C	1.8	UR	C	1.8	UR	C	1.8	UR	C
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.6	J	P	0.43	J	P	0.41	J	P	0.4	J	P
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.84	J	P	5.5			0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-37A-050415			MRC-MW-37B-050415			MRC-MW-37C-050415			TB-050415		
SDG: 2068544	LAB_ID	2068544003			2068544002			2068544001			2068544004		
FRACTION: OV	SAMP_DATE	5/4/2015			5/4/2015			5/4/2015			5/4/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	UR	C	0.32	UR	C	0.32	UR	C	0.32	UR	C
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		33			18.2			0.33	U		0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-37A-050415			MRC-MW-37B-050415		
SDG: 2068544	LAB_ID	2068544003			2068544002		
FRACTION: OVG	SAMP_DATE	5/4/2015			5/4/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		0.23	U		0.23	U	
ETHENE		0.4	U		0.4	U	
METHANE		0.34	U		0.34	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-37A-050415		
SDG: 2068544	LAB_ID	2068544003		
FRACTION: M	SAMP_DATE	5/4/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.0017	J	P
BARIUM		0.046		
BERYLLIUM		0.00039	J	P
CADMIUM		0.00037	U	
CHROMIUM		0.0023		
COBALT		0.0037	J	P
COPPER		0.0019	U	
IRON		0.56		
LEAD		0.0011	J	P
MANGANESE		0.028		
MERCURY		0.00017	U	
MOLYBDENUM		0.00074	U	
NICKEL		0.0034	J	P
SELENIUM		0.0044	J	P
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.0028		

PROJ_NO: 06247	NSAMPLE	MRC-MW-37A-050415			MRC-MW-37A-050415-DL			MRC-MW-37B-050415		
SDG: 2068544	LAB_ID	2068544003			2068544003			2068544002		
FRACTION: MISC	SAMP_DATE	5/4/2015			5/4/2015			5/4/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		39						31		
AMMONIA-N		0.054	U	A				0.054	U	A
CHLORIDE		33.2						41.1		
DISSOLVED ORGANIC CARBON		2.8						7.7		
NITRATE-N		6.7						0.8		
NITRITE-N		0.044	U					0.044	U	
ORTHOPHOSPHATE		0.0025	U					0.052		
SULFATE					241			27.8		
TOTAL DISSOLVED SOLIDS		530						194		

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544001** Date Collected: 5/4/2015 10:30 Matrix: Water

Sample ID: **MRC-MW-37C-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 23:22	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:22	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:22	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:22	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 23:22	CJG	A
Bromomethane	0.41J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 23:22	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 23:22	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:22	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:22	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 23:22	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:22	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 23:22	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:22	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:22	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 23:22	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:22	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 23:22	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 23:22	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:22	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:22	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:22	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:22	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:22	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:22	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:22	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:22	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:22	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 23:22	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:22	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:22	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 23:22	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:22	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 23:22	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:22	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544001** Date Collected: 5/4/2015 10:30 Matrix: Water

Sample ID: **MRC-MW-37C-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/6/15 23:22	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:22	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:22	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:22	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/6/15 23:22	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:22	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/6/15 23:22	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/6/15 23:22	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:22	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:22	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:22	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:22	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/6/15 23:22	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.7		%	62 - 133	SW846 8260C		5/6/15 23:22	CJG	A
4-Bromofluorobenzene (S)	85.5		%	79 - 114	SW846 8260C		5/6/15 23:22	CJG	A
Dibromofluoromethane (S)	88.6		%	78 - 116	SW846 8260C		5/6/15 23:22	CJG	A
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260C		5/6/15 23:22	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544002** Date Collected: 5/4/2015 11:30 Matrix: Water

Sample ID: **MRC-MW-37B-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 23:39	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:39	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:39	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:39	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 23:39	CJG	A
Bromomethane	0.43J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 23:39	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 23:39	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:39	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:39	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 23:39	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:39	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:39	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 23:39	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:39	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:39	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 23:39	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:39	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 23:39	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 23:39	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:39	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:39	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:39	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:39	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:39	CJG	A
cis-1,2-Dichloroethene	5.5		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:39	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:39	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:39	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:39	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:39	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 23:39	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:39	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:39	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 23:39	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:39	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 23:39	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:39	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544002** Date Collected: 5/4/2015 11:30 Matrix: Water

Sample ID: **MRC-MW-37B-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:39	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/6/15 23:39	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/6/15 23:39	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 23:39	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/6/15 23:39	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/6/15 23:39	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/6/15 23:39	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/6/15 23:39	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/6/15 23:39	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/6/15 23:39	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:39	CJG	A
Trichloroethene	18.2		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:39	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 23:39	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/6/15 23:39	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:39	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/6/15 23:39	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133		SW846 8260C			5/6/15 23:39	CJG	A
4-Bromofluorobenzene (S)	86.6		%	79 - 114		SW846 8260C			5/6/15 23:39	CJG	A
Dibromofluoromethane (S)	91.8		%	78 - 116		SW846 8260C			5/6/15 23:39	CJG	A
Toluene-d8 (S)	96.8		%	76 - 127		SW846 8260C			5/6/15 23:39	CJG	A
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			5/8/15 09:09	JSH	H
Ethene	ND		ug/L	2.4	0.40	RSK 175			5/8/15 09:09	JSH	H
Methane	ND		ug/L	1.5	0.34	RSK 175			5/8/15 09:09	JSH	H
WET CHEMISTRY											
Alkalinity, Total	31		mg/L	5	0.8	S2320B-97			5/5/15 08:06	GMM	E
Ammonia-nitrogen, Total	0.054J	J	mg/L	0.10	0.04	S4500NH3D	5/7/15	J1H	5/7/15 17:45	NJA	F
Chloride	41.1		mg/L	2.0	0.12	EPA 300.0			5/5/15 09:08	SSL	G
Nitrate-N	0.80		mg/L	0.20	0.037	EPA 300.0			5/5/15 09:08	SSL	G
Nitrite-N	ND		mg/L	0.20	0.044	EPA 300.0			5/5/15 09:08	SSL	G
Orthophosphate	0.052		mg/L	0.020	0.0025	EPA 365.3			5/5/15 03:04	GMM	G
Sulfate	27.8		mg/L	2.0	0.13	EPA 300.0			5/5/15 09:08	SSL	G
Total Dissolved Solids	194		mg/L	5	5	S2540C-11			5/7/15 12:52	ARK	G
Total Organic Carbon-Dissolved	7.7		mg/L	1.0	0.24	SW846 9060A			5/6/15 12:05	PAG	K

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID:	**2068544002**	Date Collected:	5/4/2015 11:30	Matrix:	Water
Sample ID:	**MRC-MW-37B-050415**	Date Received:	5/4/2015 20:00		

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544003** Date Collected: 5/4/2015 13:45 Matrix: Water

Sample ID: **MRC-MW-37A-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/6/15 23:56	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:56	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:56	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:56	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/6/15 23:56	CJG	A
Bromomethane	0.60J	J	ug/L	1.0	0.39	SW846 8260C		5/6/15 23:56	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/6/15 23:56	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/6/15 23:56	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:56	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/6/15 23:56	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/6/15 23:56	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:56	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/6/15 23:56	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:56	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:56	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/6/15 23:56	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:56	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/6/15 23:56	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/6/15 23:56	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/6/15 23:56	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/6/15 23:56	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/6/15 23:56	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/6/15 23:56	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:56	CJG	A
cis-1,2-Dichloroethene	0.84J	J	ug/L	1.0	0.32	SW846 8260C		5/6/15 23:56	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:56	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/6/15 23:56	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/6/15 23:56	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/6/15 23:56	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/6/15 23:56	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/6/15 23:56	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/6/15 23:56	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/6/15 23:56	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/6/15 23:56	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/6/15 23:56	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/6/15 23:56	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544003** Date Collected: 5/4/2015 13:45 Matrix: Water

Sample ID: **MRC-MW-37A-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:56	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/6/15 23:56	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/6/15 23:56	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 23:56	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/6/15 23:56	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/6/15 23:56	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/6/15 23:56	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/6/15 23:56	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/6/15 23:56	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/6/15 23:56	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:56	CJG	A
Trichloroethene	33.0		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:56	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/6/15 23:56	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/6/15 23:56	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/6/15 23:56	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/6/15 23:56	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133		SW846 8260C			5/6/15 23:56	CJG	A
4-Bromofluorobenzene (S)	87.6		%	79 - 114		SW846 8260C			5/6/15 23:56	CJG	A
Dibromofluoromethane (S)	91		%	78 - 116		SW846 8260C			5/6/15 23:56	CJG	A
Toluene-d8 (S)	97.9		%	76 - 127		SW846 8260C			5/6/15 23:56	CJG	A
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			5/8/15 09:52	JSH	I
Ethene	ND		ug/L	2.4	0.40	RSK 175			5/8/15 09:52	JSH	I
Methane	ND		ug/L	1.5	0.34	RSK 175			5/8/15 09:52	JSH	I
WET CHEMISTRY											
Alkalinity, Total	39		mg/L	5	0.8	S2320B-97			5/5/15 07:56	GMM	F
Ammonia-nitrogen, Total	0.054J	J	mg/L	0.10	0.04	S4500NH3D	5/7/15	J1H	5/7/15 17:45	NJA	G
Chloride	33.2		mg/L	2.0	0.12	EPA 300.0			5/5/15 09:20	SSL	H
Nitrate-N	6.7		mg/L	0.20	0.037	EPA 300.0			5/5/15 09:20	SSL	H
Nitrite-N	ND		mg/L	0.20	0.044	EPA 300.0			5/5/15 09:20	SSL	H
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			5/5/15 03:04	GMM	H
Sulfate	241		mg/L	5.0	0.32	EPA 300.0			5/6/15 15:02	SSL	H
Total Dissolved Solids	530		mg/L	5	5	S2540C-11			5/7/15 12:52	ARK	H
Total Organic Carbon-Dissolved	2.8		mg/L	2.0	0.47	SW846 9060A			5/6/15 12:05	PAG	L

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544003** Date Collected: 5/4/2015 13:45 Matrix: Water

Sample ID: **MRC-MW-37A-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Arsenic, Total	0.0017J	J	mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Barium, Total	0.046		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Beryllium, Total	0.00039J	J	mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Chromium, Total	0.0023		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Cobalt, Total	0.0037J	J	mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Iron, Total	0.56		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 14:33	SRT	D3
Lead, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Manganese, Total	0.028		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:26	MNP	D1
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Nickel, Total	0.0034J	J	mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Selenium, Total	0.0044J	J	mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2
Vanadium, Total	0.0028		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:15	ZMC	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544004** Date Collected: 5/4/2015 20:00 Matrix: Water

Sample ID: **TB-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 01:04	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:04	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:04	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:04	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 01:04	CJG	A
Bromomethane	0.40J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 01:04	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 01:04	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:04	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:04	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 01:04	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:04	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 01:04	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:04	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:04	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 01:04	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:04	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 01:04	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 01:04	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:04	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:04	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:04	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:04	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:04	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:04	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:04	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:04	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:04	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 01:04	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:04	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:04	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 01:04	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:04	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 01:04	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:04	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068544 TMM029|112IC06247

Lab ID: **2068544004** Date Collected: 5/4/2015 20:00 Matrix: Water

Sample ID: **TB-050415** Date Received: 5/4/2015 20:00

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/7/15 01:04	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:04	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:04	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:04	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/7/15 01:04	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:04	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/7/15 01:04	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/7/15 01:04	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:04	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:04	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:04	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:04	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/7/15 01:04	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.7		%	62 - 133	SW846 8260C		5/7/15 01:04	CJG	A
4-Bromofluorobenzene (S)	89.7		%	79 - 114	SW846 8260C		5/7/15 01:04	CJG	A
Dibromofluoromethane (S)	89.4		%	78 - 116	SW846 8260C		5/7/15 01:04	CJG	A
Toluene-d8 (S)	99.8		%	76 - 127	SW846 8260C		5/7/15 01:04	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-029

Sample Management

This report contains the results of the analysis of four (4) ground water samples collected on May 4, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 4, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Four (4) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2173978, carbon disulfide was detected at 0.41J µg/L; 1,4-dichlorobenzene was detected at 0.33J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

Light Hydrocarbon Gases by RSK-175

Sample Handling. One (1) water sample was submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2174783, was prepared from project sample MRC-MW-37B-050415 (2068544002). No target analytes were detected above the reporting limit.

Total Metals by SW-846 Method 6020A

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Ba and Cr had detectible levels in the MB at 0.00273 J mg/L and 0.00083 J mg/L respectively.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on sample, 2068544003, in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. One (1) water sample was analyzed for total mercury using EPA method 7470A. The sample was digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. Two (2) aqueous samples were analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The samples were distilled and analyzed within the 28-day holding time established for the method.

Calibration. An initial calibration was properly established on the day of analysis, and a second source standard was analyzed throughout the analysis to verify the calibration. The recoveries were within the QC limits.

Blank. A preparation blank, identified as 2174296, was distilled and analyzed with the samples. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. A laboratory control sample, identified as 2174297, was distilled and analyzed with the samples. The recovery was within QC limits.

Anions by EPA 300.0

Sample handling. Two (2) aqueous samples were analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The samples were run within method recommended holding time for each analyte.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limits.

Blanks. Initial and continuing blanks were analyzed with the samples. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2173084, 2173645 and SSL, were analyzed initially and every 20 samples. Recoveries were within the QC limits.

Dissolved Total Organic Carbon by SW-846 9060A

Sample handling. Two (2) aqueous samples were analyzed for dissolved total organic carbon by SW-846 Method 9060A. The samples were analyzed within the 28-day holding time established for the method.

Calibration. On the day of analysis, a four-point low curve calibration was properly established, and initial and continuing calibration standards were analyzed throughout the run. The recoveries were all within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Total organic carbon was not detected above the reporting limit in the blanks.

A dissolved TOC blank, identified as DISS. BLANK, was analyzed with the samples. Dissolved total organic carbon was not detected above the reporting limit in the blank.

Laboratory Control Samples. A dissolved TOC laboratory control sample, identified as 5.0 QC DISS., was analyzed with the samples. The recovery was within the QC limits.

Orthophosphate by EPA 365.3

Sample handling. Two (2) aqueous samples were analyzed for orthophosphate by EPA Method 365.3. The samples were analyzed within the hold time established for the method.

Calibration. An initial calibration was established. Initial and continuing calibration verification standards were analyzed on the day of analysis to verify the calibration. All recoveries were within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Orthophosphate was not detected above the reporting limit in the blanks.

Total Alkalinity by SM 2320B

Sample handling. Two (2) aqueous samples were analyzed for total alkalinity by Standard Method 2320B. The samples was analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the sample. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

Total Dissolved Solids by SM2540C

Sample handling. Two (2) aqueous samples were analyzed for total dissolved solids by Standard Method 2540C. The samples were analyzed within the 7-day holding time established for the method.

Blank. A preparation blank, identified as 2174384, was analyzed with the samples. Total dissolved solids were not detected above the reporting limit in the blank.

Laboratory Control Sample. A laboratory control sample, identified as 2174385, was analyzed with the samples. The recovery was within the QC limits.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/9/2015

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DJM

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE _

2068544

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech, 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-552-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature: [signature]	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Cont

PRESERVATIVE: 1 — 2 — 0 3 0 1 0

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP VOCs (8260C)	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below) (6020A)	METALS, DISSOLVED (List in comments below)	Alkalinity (2320B)	Ammonia (350.2)	TOC-Dissolved (9060/9060A)	RSK-175 (dissolved gases)	Cl, NO3, NO2, SO4, OPO4, TOS, SI (300.0)			REMARKS/ ALTERNATE DESCRIPTION
MRC-MW-37C-050415		5/4/15	1030	Aq	3	X														
MRC-MW-37B-050415			1130		10	X							X	X	X	X	X			
MRC-MW-37A-050415			1345		11	X					X	—	X	X	X	X	X			
TB-050415			—		3	X														

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

	Y	N	Initials
Custody Seals Present?		✓	LMG
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			
Tracking #:			

Cooler Temp: 1 °C
Cooler #:
Therm ID: 241
Ship Carrier:
FedEx UPS
DHL _____

SPECIAL INSTRUCTIONS/COMMENTS

Metals
* SEE SCOPE FOR FULL METALS LIST + NAA/MEE METHODS *
* 48 HR HOLD TIME FOR NO_3, NO_2
* ALL SAMPLES GO TO MIDDLETOWN, PA LAB

See QAPP ☐

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
STANDARD
REQUESTED REPORT DATE

REP
_____ I. Res
_____ II. Res (LCS,
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____ Yes _____ No

BILL TO:
LMG 05/05/15 0040

STATE WHERE SAMPLES WERE COLLECTED MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature [signature]	Signature [signature] Jerome Williams	Signature [signature] Jerome Williams	Signature [signature]	Signature [signature]	Signature
Printed Name Josh Mullis	Printed Name	Printed Name Jerome Williams	Printed Name Hardcorp	Printed Name Hardcorp	Printed Name
Firm Tetra Tech	Firm ALS	Firm ALS	Firm ALS	Firm ALS	Firm
Date/Time 5/4/15 1530	Date/Time 5/4/15 1532	Date/Time 5/4/15	Date/Time 5/4 1715	Date/Time 5/4 2000	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

5-4-15 2000

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Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-029

Lab File ID: 15050650.D BFB Injection Date: 5/6/2015

Instrument ID: ms15.i BFB Injection Time: 17:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.8
175	5.0 - 9.0% of mass 174	5.8 (7.3) 1
176	95.0 - 101.0% of mass 174	75.9 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15050653.D	5/6/2015	18:13
1234	1234	15050654.D	5/6/2015	18:30
1235	1235	15050655.D	5/6/2015	18:48
1236	1236	15050656.D	5/6/2015	19:05
1237	1237	15050657.D	5/6/2015	19:22
1238	1238	15050658.D	5/6/2015	19:39
1239	1239	15050659.D	5/6/2015	19:56
2173978(MB)	2173978	15050663.D	5/6/2015	21:05
2173979(LCS)	2173979	15050664.D	5/6/2015	21:22
MRC-MW-37C-050415	2068544001	15050671.D	5/6/2015	23:22
MRC-MW-37B-050415	2068544002	15050672.D	5/6/2015	23:39
MRC-MW-37A-050415	2068544003	15050673.D	5/6/2015	23:56
TB-050415	2068544004	15050677.D	5/7/2015	01:04

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	8501	35072	135342	350427	731790	L
Acrolein	0.03945	0.03688	0.03697	0.03725	0.03731	A
Acrylonitrile	0.09911	0.09209	0.09262	0.09072	0.08947	A
Acetonitrile	11597	55954	224250	462085	952278	L
tert-Amyl Ethylether	21769	118195	571081	1645134	3793931	Q
tert-Amyl methyl ether	29058	166309	788729	2237478	5058853	L
tert-Amyl Alcohol	3718	18089	78426	233257	531891	Q
Benzene	1.28974	1.24799	1.26475	1.20941	1.19795	A
Benzyl Chloride	1807	10498	55797	207230	567365	Q
Bromobenzene	0.82401	0.85585	0.94005	0.92938	0.90435	A
Bromochloromethane	0.17552	0.16960	0.16314	0.15572	0.15246	A
Bromodichloromethane	0.35528	0.33663	0.35731	0.36178	0.37690	A
Bromoform *	0.36674	0.32937	0.35450	0.39438	0.41777	A
Bromomethane	14837	65495	226567	494685	965103	L
2-Butanone	0.02934	0.03221	0.03325	0.03312	0.03438	A
tert.- Butyl Alcohol	0.02009	0.01626	0.01693	0.01651	0.01704	A
tert-Butylbenzene	7838	61810	365956	1034851	2257570	Q
n-Butylbenzene	9241	56953	361835	1066134	2381679	Q
sec-Butylbenzene	42023	327817	1941705	5419791	11645036	Q
Carbon Disulfide	0.64155	0.55003	0.56368	0.57705	0.61526	A
Carbon Tetrachloride	0.34641	0.33672	0.35162	0.34896	0.35865	A
Chloroacetonitrile	1626	9683	51683	152302	332972	Q
Chlorobenzene *	2.45835	2.23439	2.16237	2.07797	2.07798	A
1-Chlorobutane	0.31205	0.28785	0.29144	0.27959	0.27271	A
Chlorodibromomethane	0.63400	0.54654	0.61265	0.64779	0.69258	A
Chloroethane	0.19755	0.19587	0.18536	0.17272	0.17070	A
2-Chloroethylvinyl ether	63.00000	1245	4728	15174	49027	Q
Chloroform **	64764	235362	875496	2166008	4486712	L
1-Chlorohexane	13506	83631	467723	1389198	3201755	L
Chloromethane *	30967	138649	539207	1316365	2683003	L
Chloroprene	0.41968	0.37875	0.39134	0.39030	0.40126	A
3-Chloro-1-propene	0.29473	0.26216	0.25692	0.24944	0.25323	A
o-Chlorotoluene	2.16415	2.26581	2.78420	2.85677	2.85244	A
p-Chlorotoluene	36372	251616	1382039	3840609	8372873	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.38635	0.37545	0.41271	0.40873	0.41527	A
1,2-Dibromo-3-Chloropropane	2487	10943	50772	154863	359963	Q
1,2-Dibromoethane	0.59915	0.55060	0.55721	0.58496	0.59813	A
Dibromomethane	0.20067	0.17672	0.17531	0.17241	0.17203	A
trans-1,4-Dichloro-2-butene	3098	19803	98850	278421	610749	Q
1,2-Dichlorobenzene	1.64743	1.59083	1.69102	1.66838	1.64577	A
1,3-Dichlorobenzene	1.68161	1.69912	1.80604	1.75330	1.72712	A
1,4-Dichlorobenzene	2.01369	1.87937	1.84806	1.79339	1.75948	A
Dichlorodifluoromethane	24504	128057	484555	1163500	2408931	L
1,1-Dichloroethane *	0.64100	0.56262	0.55519	0.51796	0.51154	A
1,2-Dichloroethene, Total	54837	249865	1041228	2713259	5792365	L
1,2-Dichloroethane	0.45282	0.40321	0.39029	0.36789	0.35695	A
1,1-Dichloroethene **	25684	122667	494331	1252956	2656177	L
cis-1,2-Dichloroethene	0.44345	0.38248	0.38404	0.38001	0.38483	A
trans-1,2-Dichloroethene	26363	117671	480631	1221323	2586330	L
Dichlorofluoromethane	35935	177027	713747	1773821	3768998	L
1,1-Dichloro-2-Propanone	1005	6320	32354	96770	215325	Q
2,2-Dichloropropane	0.33269	0.29873	0.30793	0.31277	0.32932	A
1,3-Dichloropropane	1.15396	1.07214	1.07134	1.09543	1.10703	A
1,2-Dichloropropane **	0.31229	0.29880	0.30670	0.29957	0.30447	A
1,1-Dichloropropene	0.37952	0.38336	0.40267	0.39628	0.40129	A
cis-1,3-Dichloropropene	17218	100093	523685	1610572	3728252	Q
trans-1,3-Dichloropropene	15073	89606	495010	1450365	3305129	Q
1,3-Dichloropropene, Total	32291	189699	1018695	3060937	7033381	L
Diisobutylene	98672	259936	952410	2466418	5297899	L
Diisopropyl ether	0.83075	0.78390	0.80978	0.80686	0.81767	A
1,4-Dioxane	3928	18650	99538	290846	649257	Q
Ethyl Acetate	0.22784	0.19498	0.21243	0.21553	0.21794	A
Ethyl ether	0.17981	0.15695	0.15163	0.15205	0.15153	A
Ethyl Methacrylate	11494	75076	423595	1334399	3017311	Q
Ethyl tert-butyl ether	0.64208	0.61131	0.66553	0.68787	0.71346	A
Ethylbenzene **	0.91262	1.00200	1.09645	1.06897	1.09821	A
Freon 113	0.28748	0.25080	0.22976	0.21149	0.20744	A
Heptane	9489	53019	259175	726713	1597366	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.52702	0.41287	0.41054	0.40558	0.41845	A
Hexachloroethane	0.50334	0.39568	0.44830	0.48667	0.52952	A
Hexane	0.45804	0.40253	0.37947	0.37915	0.38040	A
2-Hexanone	26266	174955	1039944	3093854	6608143	L
Iodomethane	2621	12319	85152	363793	941538	L
Isobutyl alcohol	0.01404	0.01282	0.01447	0.01424	0.01459	A
Isopropyl Alcohol	0.01474	0.01042	0.01077	0.01096	0.01095	A
Isopropylbenzene	43372	288511	1743721	5098736	11327248	Q
p-Isopropyltoluene	7861	65312	409298	1210285	2680089	Q
Methyl acetate	0.04717	0.04227	0.03895	0.03698	0.03666	A
Methyl acrylate	0.20265	0.18987	0.21111	0.21999	0.22821	A
Methacrylonitrile	5494	39746	176725	455703	946249	L
Methyl cyclohexane	1.05246	1.01059	1.04947	1.05313	1.08238	A
Methyl methacrylate	7983	40667	221833	698004	1593085	Q
Methyl t-Butyl Ether	0.65330	0.56953	0.55894	0.55807	0.57066	A
4-Methyl-2-Pentanone(MIBK)	46008	286802	1593100	4545674	9554810	Q
Methylene Chloride	40634	120012	420925	1032928	2125959	L
Naphthalene	18581	94297	634655	2564618	6395734	Q
Nitrobenzene	4302	18609	90511	314227	985933	Q
2-Nitropropane	10064	59135	303345	941878	2142630	Q
Octane	5189	30412	189507	588837	1314693	Q
Pentachloroethane	0.67263	0.59764	0.62486	0.62708	0.62217	A
Pentane	0.18013	0.16149	0.14470	0.13477	0.13207	A
n-Propanol	0.02423	0.02189	0.02143	0.01990	0.01824	A
Propionitrile	0.04270	0.03710	0.03654	0.03590	0.03510	A
n-Propylbenzene	11323	83681	525133	1445818	3158530	Q
Styrene	29192	181101	1216935	3511833	7679595	Q
1,1,1,2-Tetrachloroethane	0.74409	0.67284	0.68376	0.67814	0.69872	A
1,1,2,2-Tetrachloroethane *	1.13950	0.94878	0.89913	0.88907	0.83701	A
Tetrachloroethene	0.86026	0.74852	0.69360	0.63646	0.62864	A
Tetrahydrofuran	0.05261	0.05796	0.06412	0.06685	0.06667	A
Toluene **	1.46489	1.52937	1.80268	1.79680	1.82682	A
Total Xylenes	62607	414011	2245705	6309744	13814041	L
1,2,3-Trichlorobenzene	11589	66501	396432	1217634	2715851	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	13726	77222	435037	1396255	3281656	Q
1,1,1-Trichloroethane	0.44527	0.41514	0.42180	0.40954	0.41473	A
1,1,2-Trichloroethane	0.70775	0.59375	0.56529	0.54252	0.53707	A
Trichloroethene	0.36183	0.32858	0.32177	0.30710	0.30379	A
Trichlorofluoromethane	0.51189	0.48947	0.43838	0.40675	0.39547	A
1,2,3-Trichloropropane	0.32003	0.28372	0.28263	0.26746	0.25860	A
1,2,4-Trimethylbenzene	33499	252668	1612868	4476039	9859778	Q
1,3,5-Trimethylbenzene	30854	252677	1592710	4389664	9595121	Q
Vinyl Acetate	2740	15997	81079	228469	502515	Q
Vinyl Chloride **	22127	108617	440365	1120144	2398158	L
o-Xylene	18818	114724	656929	2013464	4525328	Q
mp-Xylene	0.93062	1.09366	1.30718	1.31991	1.34868	A
4-Bromofluorobenzene	16450	84619	411821	1169236	2598331	L
Dibromofluoromethane	0.35159	0.31139	0.29959	0.28790	0.28615	A
1,2-Dichloroethane-d4	28303	127446	471263	1202056	2461708	L
Toluene-d8	2.38860	2.21270	2.40160	2.44191	2.52755	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	1487496			L	0.000000	55.562489		0.99972
Acrolein	0.03828	0.04603		A		0.038880		8.43794
Acrylonitrile	0.09559	0.10188		A		0.094500		4.84620
Acetonitrile	1974485			L	0.000000	41.937870		0.99803
tert-Amyl Ethylether	8552003	12224		Q	0.000000	0.387160	0.020030	0.99999
tert-Amyl methyl ether	11223846	15157		L	0.000000	1.509960		0.99497
tert-Amyl Alcohol	1261596	1579		Q	0.000000	0.010370	0.000150	0.99996
Benzene	0.92262	1.40154		A		1.219140		12.05685
Benzyl Chloride				Q	0.000000	0.099450	0.024470	0.99967
Bromobenzene	0.95110	0.80106		A		0.886540		6.72760
Bromochloromethane	0.14709	0.20028		A		0.166260		10.79593
Bromodichloromethane	0.40396	0.37793		A		0.367110		5.84639
Bromoform *	0.48813	0.33204		A		0.383280		14.65896
Bromomethane	2050088			L	0.000000	8.103020		0.99728
2-Butanone	0.03653			A		0.033140		7.18044
tert.- Butyl Alcohol	0.01932			A		0.017690		9.06431
tert-Butylbenzene	4642215	3868		Q	0.000000	0.688690	0.009870	0.99995
n-Butylbenzene	4906962			Q	0.000000	0.713050	0.012760	0.99993
sec-Butylbenzene	16063735	17046		Q	-0.267280	4.665220	-0.300370	0.99814
Carbon Disulfide	0.65080	0.74826		A		0.620950		10.96066
Carbon Tetrachloride	0.37573	0.33355		A		0.350230		4.03841
Chloroacetonitrile	739616			Q	0.000000	0.016550	0.000180	0.99988
Chlorobenzene *	2.04001	2.37875		A		2.204260		7.32791
1-Chlorobutane	0.27771	0.31060		A		0.290280		5.40157
Chlorodibromomethane	0.79705	0.61836		A		0.649850		12.05101
Chloroethane	0.16012			A		0.180390		8.30640
2-Chloroethylvinyl ether		71.00000		Q	0.000000	0.002100	0.001130	0.99952
Chloroform **	9028784	49185		L	0.000000	1.824750		0.99969
1-Chlorohexane	6864326	6871		L	0.000000	0.985690		0.99409
Chloromethane *	5425849			L	0.000000	3.037050		0.99954
Chloroprene	0.42001	0.48584		A		0.412460		8.68095
3-Chloro-1-propene	0.24646	0.34853		A		0.273070		13.54156
o-Chlorotoluene	2.60631	2.21453		A		2.534890		12.30947
p-Chlorotoluene	14110231	15830		Q	0.000000	2.912310	-0.091910	0.99956
Cyclohexane	0.42766	0.32991		A		0.393730		8.46357
1,2-Dibromo-3-Chloropropane	828598	1155		Q	0.000000	0.095440	0.005890	0.99996

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.67905	0.66635		A		0.605060		8.25662
Dibromomethane	0.18178	0.20731		A		0.183750		7.79907
trans-1,4-Dichloro-2-butene	1335426	832		Q	0.000000	0.176960	0.005990	0.99990
1,2-Dichlorobenzene	1.74573	1.62186		A		1.658720		3.01129
1,3-Dichlorobenzene	1.81859	1.57616		A		1.723130		4.78628
1,4-Dichlorobenzene	1.83424	2.01043		A		1.876950		5.32592
Dichlorodifluoromethane	4848952			L	0.000000	3.397030		0.99959
1,1-Dichloroethane *		0.72538		A		0.585610		14.10649
1,2-Dichloroethene, Total	11862157	30886		L	0.000000	2.795550		0.99956
1,2-Dichloroethane	0.36755	0.44716		A		0.397980		9.74642
1,1-Dichloroethene **	5336933	15733		L	0.000000	3.090710		0.99986
cis-1,2-Dichloroethene	0.40488	0.47415		A		0.407690		9.06038
trans-1,2-Dichloroethene	5210063	15512		L	0.000000	3.167850		0.99984
Dichlorofluoromethane	7551750	22300		L	0.000000	2.182690		0.99985
1,1-Dichloro-2-Propanone	479650			Q	0.000000	0.010550	0.000120	0.99993
2,2-Dichloropropane	0.35920	0.34952		A		0.327160		6.77379
1,3-Dichloropropane	1.22249	1.13681		A		1.122740		4.78504
1,2-Dichloropropane **	0.31960	0.35014		A		0.313080		5.71048
1,1-Dichloropropene	0.41431	0.41389		A		0.398760		3.40432
cis-1,3-Dichloropropene	8231315	10015		Q	0.000000	0.897100	0.054120	0.99996
trans-1,3-Dichloropropene	7237259	7110		Q	0.000000	0.812440	0.043970	0.99998
1,3-Dichloropropene, Total	15468574	17125		L	0.000000	0.879600		0.99224
Diisobutylene	10831379	72367		L	0.000000	1.530470		0.99945
Diisopropyl ether	0.79384	0.90312		A		0.820840		4.79358
1,4-Dioxane	1399691			Q	0.000000	0.002800	0.000001	0.99997
Ethyl Acetate	0.23822	0.20713		A		0.216300		6.45785
Ethyl ether	0.15706	0.20420		A		0.164750		12.16900
Ethyl Methacrylate	6663493	5615		Q	0.000000	0.734110	0.042580	0.99993
Ethyl tert-butyl ether	0.75888	0.72254		A		0.685950		7.36936
Ethylbenzene **	1.18268	0.98979		A		1.050100		8.45052
Freon 113	0.20818	0.25052		A		0.235100		12.64637
Heptane	3274130	2764		L	0.000000	5.076210		0.99920
Hexachlorobutadiene	0.43929	0.47725		A		0.441570		10.20987
Hexachloroethane	0.58726	0.53095		A		0.497390		12.48600
Hexane	0.38529	0.42727		A		0.401740		7.57373
2-Hexanone	12919854	13417		L	0.000000	2.554440		0.99946

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-029

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14912343	16186		Q	0.000000	3.603130	-0.175140	0.99854
1,3,5-Trimethylbenzene	14769233	15047		Q	0.000000	3.492000	-0.162190	0.99888
Vinyl Acetate	1076799	1354		Q	0.000000	0.055210	0.001550	0.99999
Vinyl Chloride **	5003913			L	0.000000	3.328000		0.99895
o-Xylene	9575307	9773		Q	0.000000	1.152210	0.046670	0.99993
mp-Xylene	1.12023	1.00566		A		1.160850		14.29601
4-Bromofluorobenzene		9785		L	0.000000	1.216410		0.99960
Dibromofluoromethane				A		0.307320		8.70339
1,2-Dichloroethane-d4	4970938			L	0.000000	3.315890		0.99971
Toluene-d8				A		2.394470		4.81125

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2173978

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-029

Lab File ID: 15050663.D Lab Sample ID: 2173978

Date Analyzed: 5/6/2015 Time Analyzed: 21:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2173979(LCS)	2173979	15050664.D	21:22
MRC-MW-37C-050415	2068544001	15050671.D	23:22
MRC-MW-37B-050415	2068544002	15050672.D	23:39
MRC-MW-37A-050415	2068544003	15050673.D	23:56
TB-050415	2068544004	15050677.D	01:04

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-029

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.33	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-029

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-029

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2173978(MB)	87.9	86.3	96.5	95.4	0
02	2173979(LCS)	83.8	80.8	87.7	90.4	0
03	MRC-MW-37C-050415	85.5	88.6	99.7	96.4	0
04	MRC-MW-37B-050415	86.6	91.8	103	96.8	0
05	MRC-MW-37A-050415	87.6	91.0	103	97.9	0
06	TB-050415	89.7	89.4	99.7	99.8	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-029

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		103	103	(40-151)
Benzene	20.0		20.1	100	(80-124)
Bromochloromethane	20.0		19.3	96.6	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.6	87.8	(70-123)
Bromomethane	20.0		25.7	129	(45-148)
2-Butanone	100		99.4	99.4	(50-152)
Carbon Disulfide	20.0		16.6	83.1	(57-131)
Carbon Tetrachloride	20.0		19.1	95.7	(62-132)
Chlorobenzene	20.0		19.0	94.9	(85-117)
Chlorodibromomethane	20.0		18.0	89.9	(77-122)
Chloroethane	20.0		19.3	96.5	(51-142)
Chloroform	20.0		21.1	105	(78-122)
Chloromethane	20.0		26.2	131	(38-156)
Cyclohexane	20.0		20.3	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.0	95.2	(59-133)
1,2-Dibromoethane	20.0		18.4	91.8	(80-124)
1,2-Dichlorobenzene	20.0		18.8	94.1	(82-118)
1,3-Dichlorobenzene	20.0		19.8	99	(81-118)
1,4-Dichlorobenzene	20.0		18.5	92.6	(81-116)
Dichlorodifluoromethane	20.0		26.1	131	(17-166)
1,1-Dichloroethane	20.0		18.3	91.7	(78-124)
1,2-Dichloroethane	20.0		18.8	94	(70-133)
1,1-Dichloroethene	20.0		19.9	99.4	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	93.9	(78-125)
trans-1,2-Dichloroethen	20.0		21.2	106	(71-122)
1,2-Dichloropropane	20.0		18.8	94.2	(81-127)
cis-1,3-Dichloropropene	20.0		18.3	91.5	(81-121)
trans-1,3-Dichloroprope	20.0		19.6	98	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-029

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		495	98.9	(1-280)
Ethylbenzene	20.0		19.8	99	(80-124)
Freon 113	20.0		18.2	90.9	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		19.5	97.4	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90	(69-115)
4-Methyl-2-Pentanone(MI	100		81.6	81.6	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		17.2	86.2	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.7	88.5	(74-135)
Tetrachloroethene	20.0		18.1	90.7	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.1	85.6	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84	(67-123)
1,1,1-Trichloroethane	20.0		18.5	92.4	(66-130)
1,1,2-Trichloroethane	20.0		18.0	89.8	(82-126)
Trichloroethene	20.0		19.3	96.4	(77-124)
Trichlorofluoromethane	20.0		19.4	97	(38-123)
Vinyl Chloride	20.0		23.4	117	(27-138)
o-Xylene	20.0		18.4	92.1	(79-124)
mp-Xylene	40.0		43.8	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-029

Lab File ID: 15050657.D Date Analyzed: 5/6/2015

Instrument ID: ms15.i Time Analyzed: 19:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	976495	5.913	866637	7.686	2355608	3.910
UPPER LIMIT	1952990	6.413	1733274	8.186	4711216	4.410
LOWER LIMIT	488248	5.413	433319	7.186	1177804	3.410
SAMPLE NO.						
2173978(MB)	752321	5.912	603856	7.686	1965746	3.910
2173979(LCS)	926739	5.913	855915	7.686	2195905	3.910
MRC-MW-37C-050415	685496	5.912	536503	7.686	1870545	3.910
MRC-MW-37B-050415	671139	5.912	527735	7.686	1785818	3.910
MRC-MW-37A-050415	646978	5.913	511447	7.686	1759309	3.910
TB-050415	686648	5.913	544854	7.686	1885652	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Light Hydrocarbon Gases by Method RSK-175 Summary Forms

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
10						
11						
12						
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31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	05/08/15	0656		
02	LEVEL5	LEVEL5	05/08/15	0724		
03	2174782	2174782	05/08/15	0746		
04	MRC-MW-37B-0	2068544002	05/08/15	0909		
05	MRC-MW-37B-0	2174783	05/08/15	0937		
06	MRC-MW-37A-0	2068544003	05/08/15	0952		
07	LEVEL5	LEVEL5	05/08/15	1052		
08						
09						
10						
11						
12						
13						
14						
15						
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31						
32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RF10: MD2A009 RF50: MD2A002 RF100: MD2A003
RF500: MD2A004 RF1000: MD2A005 RF10000: MD2A006

COMPOUND	RF10	RF50	RF100	RF500	RF1000	RF10000
METHANE	32.711	28.296	25.507	24.980	23.513	23.330
ETHENE	50.865	48.801	48.238	46.332	43.516	
ETHANE	52.610	49.609	48.713	46.893	44.002	
PROPANE	74.249	71.266	71.078	69.260	65.151	65.296
N-BUTANE	100.200	92.620	91.190	91.852	86.759	82.379
ISO-BUTANE	90.200	89.460	88.960	90.476	85.102	82.421

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RT1: MD2A009 RT2: MD2A002 RT3: MD2A003
RT4: MD2A004 RT5: MD2A005 RT6: MD2A006

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
METHANE	0.500	0.480	0.490	0.490	0.490	0.490
ETHENE	1.900	1.890	1.890	1.890	1.890	
ETHANE	2.370	2.360	2.360	2.360	2.360	
PROPANE	4.480	4.470	4.470	4.470	4.470	4.460
N-BUTANE	6.700	6.700	6.700	6.690	6.690	6.680
ISO-BUTANE	6.190	6.170	6.170	6.170	6.160	6.160

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RT7: MD2A007

COMPOUND	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
METHANE	0.490	0.490	0.457	0.536
ETHENE		1.892	1.751	2.056
ETHANE		2.362	2.180	2.560
PROPANE	4.430	4.464	4.119	4.835
N-BUTANE	6.610	6.681	6.164	7.236
ISO-BUTANE	6.080	6.157	5.692	6.682

FORM VI VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date: 05/08/15 Time: 0656

Lab File ID: ME8A001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.820991	0.01	-6.20	15.00	AVRG	
ETHENE	47.550000	47.654784	0.01	0.22	15.00	AVRG	
ETHANE	48.365000	47.619544	0.01	-1.54	15.00	AVRG	
PROPANE	67.640000	69.932787	0.01	3.39	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date: 05/08/15 Time: 0724

Lab File ID: ME8A002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	24.711430	0.01	-2.69	15.00	AVRG
ETHENE	47.550000	46.577148	0.01	-2.04	15.00	AVRG
ETHANE	48.365000	48.522772	0.01	0.33	15.00	AVRG
PROPANE	67.640000	72.286278	0.01	6.87	15.00	AVRG
N-BUTANE	88.662000	98.043000	0.01	10.58	15.00	AVRG
ISO-BUTANE	85.930000	95.467000	0.01	11.10	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Instrument ID: GC03 Calibration Date: 05/08/15 Time: 1052

Lab File ID: ME8A012 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	24.348539	0.01	-4.12	15.00	AVRG
ETHENE	47.550000	45.764648	0.01	-3.75	15.00	AVRG
ETHANE	48.365000	47.645545	0.01	-1.49	15.00	AVRG
PROPANE	67.640000	70.802567	0.01	4.68	15.00	AVRG
N-BUTANE	88.662000	95.675000	0.01	7.91	15.00	AVRG
ISO-BUTANE	85.930000	93.332000	0.01	8.61	15.00	AVRG

FORM VII VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2174782

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Lab File ID: ME8A003 Lab Sample ID: 2174782

Date Analyzed: 05/08/15 Time Analyzed: 0746

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-37B-0	2068544002	ME8A007	0909
02	MRC-MW-37B-0	2174783	ME8A008	0937
03	MRC-MW-37A-0	2068544003	ME8A009	0952
04				
05				
06				
07				
08				
09				
10				
11				
12				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2174782

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM029

Matrix: (soil/water) WATER Lab Sample ID: 2174782

Sample wt/vol: _____ (g/mL) ML Lab File ID: ME8A003

Level: (low/med) LOW Date Received: 05/08/15

% Moisture: not dec. _____ Date Analyzed: 05/08/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM I VOA

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1023	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Arsenic	0.0981	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Barium	0.1013	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Beryllium	0.1012	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Cadmium	0.1033	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Chromium	0.1017	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Copper	0.1011	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Lead	0.1030	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Manganese	0.1023	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Molybdenum	0.1052	0.1000	105		90 - 110	M	5/6/2015	23:16	A050615B 2
	Nickel	0.1006	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Selenium	0.0979	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Silver	0.0978	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Thallium	0.0980	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Vanadium	0.1022	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
LLICV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/6/2015	23:24	A050615B 2
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/6/2015	23:24	A050615B 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/6/2015	23:24	A050615B 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/6/2015	23:24	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Chromium	0.0021	0.0020	105		70 - 130	M	5/6/2015	23:24	A050615B 2
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/6/2015	23:24	A050615B 2
	Selenium	0.0046	0.0050	92		70 - 130	M	5/6/2015	23:24	A050615B 2
	Silver	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Vanadium	0.0024	0.0020	120		70 - 130	M	5/6/2015	23:24	A050615B 2

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1014	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Arsenic	0.0981	0.1000	98		90 - 110	M	5/7/2015	03:49	A050615B 2
	Barium	0.1019	0.1000	102		90 - 110	M	5/7/2015	03:49	A050615B 2
	Beryllium	0.0949	0.1000	95		90 - 110	M	5/7/2015	03:49	A050615B 2
	Cadmium	0.1034	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Chromium	0.1006	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Cobalt	0.1005	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
	Copper	0.1009	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Lead	0.1031	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Manganese	0.1006	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Molybdenum	0.1032	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Nickel	0.1001	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
	Selenium	0.0954	0.1000	95		90 - 110	M	5/7/2015	03:49	A050615B 2
	Silver	0.0961	0.1000	96		90 - 110	M	5/7/2015	03:49	A050615B 2
	Thallium	0.0966	0.1000	97		90 - 110	M	5/7/2015	03:49	A050615B 2
	Vanadium	0.0997	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
LLCCV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/7/2015	03:56	A050615B 2
	Arsenic	0.0033	0.0030	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Barium	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	5/7/2015	03:56	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Chromium	0.0018	0.0020	90		70 - 130	M	5/7/2015	03:56	A050615B 2
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/7/2015	03:56	A050615B 2
	Selenium	0.0053	0.0050	106		70 - 130	M	5/7/2015	03:56	A050615B 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/7/2015	03:56	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/7/2015	03:56	A050615B 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1018	0.1000	102		90 - 110	M	5/7/2015	04:38	A050615B 2
	Arsenic	0.1005	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Barium	0.1011	0.1000	101		90 - 110	M	5/7/2015	04:38	A050615B 2
	Beryllium	0.0951	0.1000	95		90 - 110	M	5/7/2015	04:38	A050615B 2
	Cadmium	0.1030	0.1000	103		90 - 110	M	5/7/2015	04:38	A050615B 2
	Chromium	0.1003	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Cobalt	0.0998	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Copper	0.0996	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Lead	0.1024	0.1000	102		90 - 110	M	5/7/2015	04:38	A050615B 2
	Manganese	0.1005	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Molybdenum	0.1037	0.1000	104		90 - 110	M	5/7/2015	04:38	A050615B 2
	Nickel	0.0984	0.1000	98		90 - 110	M	5/7/2015	04:38	A050615B 2
	Selenium	0.0998	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Silver	0.0960	0.1000	96		90 - 110	M	5/7/2015	04:38	A050615B 2
	Thallium	0.0964	0.1000	96		90 - 110	M	5/7/2015	04:38	A050615B 2
	Vanadium	0.0997	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
LLCCV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/7/2015	04:45	A050615B 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/7/2015	04:45	A050615B 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Chromium	0.0019	0.0020	95		70 - 130	M	5/7/2015	04:45	A050615B 2
	Cobalt	0.0053	0.0050	106		70 - 130	M	5/7/2015	04:45	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	04:45	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Manganese	0.0055	0.0050	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Nickel	0.0050	0.0050	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Selenium	0.0053	0.0050	106		70 - 130	M	5/7/2015	04:45	A050615B 2
	Silver	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/7/2015	04:45	A050615B 2

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/6/2015	23:20	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/6/2015	23:20	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/6/2015	23:20	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/6/2015	23:20	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	03:53	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	03:53	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	03:53	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	03:53	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	04:42	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	04:42	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	04:42	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	04:42	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173828			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/7/2015	04:08	A050615B 2250
	Barium	0.00273	J		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/7/2015	04:08	A050615B 2250
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/7/2015	04:08	A050615B 2250
	Chromium	0.00083	J		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	5/7/2015	04:08	A050615B 2250
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/7/2015	04:08	A050615B 2250
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Arsenic	0.0002				-0.00300 - -0.00300	5/6/2015	23:39	A050615B 22
	Barium	0.0004				-0.01000 - -0.01000	5/6/2015	23:39	A050615B 22
	Beryllium	0.00002				-0.001000 - -0.001000	5/6/2015	23:39	A050615B 22
	Cadmium	0.0009				-0.00100 - -0.00100	5/6/2015	23:39	A050615B 22
	Chromium	0.0004				-0.00400 - -0.00400	5/6/2015	23:39	A050615B 22
	Cobalt	0.0007				-0.00600 - -0.00600	5/6/2015	23:39	A050615B 22
	Copper	0.0014				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Lead	0.0001				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Manganese	0.0014				-0.01000 - -0.01000	5/6/2015	23:39	A050615B 22
	Molybdenum	2.0846	2.00000	104		80 - 120%	5/6/2015	23:39	A050615B 22
	Nickel	0.0007				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Selenium	0.0000				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Silver	0.0005				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Thallium	0.00002				-0.001000 - -0.001000	5/6/2015	23:39	A050615B 22
	Vanadium	0.0002				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/6/2015	23:43	A050615B 22
	Arsenic	0.0207	0.02000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Barium	0.0004				-0.00500 - -0.00500	5/6/2015	23:43	A050615B 22
	Beryllium	0.00002				-0.001000 - -0.001000	5/6/2015	23:43	A050615B 22
	Cadmium	0.0106	0.01000	106		80 - 120%	5/6/2015	23:43	A050615B 22
	Chromium	0.0205	0.02000	102		80 - 120%	5/6/2015	23:43	A050615B 22
	Cobalt	0.0396	0.04000	99		80 - 120%	5/6/2015	23:43	A050615B 22
	Copper	0.0209	0.02000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Lead	0.0002				-0.00200 - -0.00200	5/6/2015	23:43	A050615B 22
	Manganese	0.0217	0.02000	108		80 - 120%	5/6/2015	23:43	A050615B 22
	Molybdenum	2.0862	2.00000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Nickel	0.0373	0.04000	93		80 - 120%	5/6/2015	23:43	A050615B 22
	Selenium	0.0189	0.02000	94		80 - 120%	5/6/2015	23:43	A050615B 22
	Silver	0.0206	0.02000	103		80 - 120%	5/6/2015	23:43	A050615B 22
	Thallium	0.00002				-0.001000 - -0.001000	5/6/2015	23:43	A050615B 22
	Vanadium	0.0417	0.04000	104		80 - 120%	5/6/2015	23:43	A050615B 22

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2068544003 **Client ID:** MRC-MW-37A-050415S **LIMS ID:** 2173830

Percent Solids for Sample: 0.00 **Spiked ID:** 2068544003S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.213		0.002		0.222	95		M
Barium	mg/L	75 - 125	2.103		0.046		2.222	93		M
Beryllium	mg/L	75 - 125	0.19328		0.00039		0.22222	87		M
Cadmium	mg/L	75 - 125	0.206		0.000		0.222	93		M
Chromium	mg/L	75 - 125	0.219		0.002		0.222	98		M
Cobalt	mg/L	75 - 125	0.217		0.004		0.222	96		M
Copper	mg/L	75 - 125	0.209		0.002		0.222	93		M
Lead	mg/L	75 - 125	0.225		0.001		0.222	101		M
Manganese	mg/L	75 - 125	0.247		0.028		0.222	99		M
Molybdenum	mg/L	75 - 125	0.221		0.002	U	0.222	100		M
Nickel	mg/L	75 - 125	0.211		0.003		0.222	94		M
Selenium	mg/L	75 - 125	0.203		0.004		0.222	90		M
Silver	mg/L	75 - 125	0.107		0.002	U	0.111	96		M
Thallium	mg/L	75 - 125	0.2193		0.0010	U	0.2222	99		M
Vanadium	mg/L	75 - 125	0.221		0.003		0.222	98		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2068544003 **Client ID:** MRC-MW-37A-050415SD **LIMS ID:** 2173831

Percent Solids for Sample: 0.00 **Spiked ID:** 2068544003SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.216		0.002		0.222	96		M
Barium	mg/L	75 - 125	2.135		0.046		2.222	94		M
Beryllium	mg/L	75 - 125	0.19629		0.00039		0.22222	88		M
Cadmium	mg/L	75 - 125	0.207		0.000		0.222	93		M
Chromium	mg/L	75 - 125	0.222		0.002		0.222	99		M
Cobalt	mg/L	75 - 125	0.222		0.004		0.222	98		M
Copper	mg/L	75 - 125	0.213		0.002		0.222	95		M
Lead	mg/L	75 - 125	0.228		0.001		0.222	102		M
Manganese	mg/L	75 - 125	0.250		0.028		0.222	100		M
Molybdenum	mg/L	75 - 125	0.225		0.002	U	0.222	101		M
Nickel	mg/L	75 - 125	0.216		0.003		0.222	96		M
Selenium	mg/L	75 - 125	0.203		0.005		0.222	89		M
Silver	mg/L	75 - 125	0.109		0.002	U	0.111	98		M
Thallium	mg/L	75 - 125	0.2233		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.226		0.003		0.222	100		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2068544003S **Client ID:** MRC-MW-37A-050415SD **LIMS ID:** 2173831

Percent Solids for Sample: 0.00 **Duplicate ID:** 2068544003SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.22		0		M
Arsenic	mg/L	0 - 20	0.213		0.216		1		M
Barium	mg/L	0 - 20	2.103		2.135		2		M
Beryllium	mg/L	0 - 20	0.19328		0.19629		2		M
Cadmium	mg/L	0 - 20	0.206		0.207		0		M
Chromium	mg/L	0 - 20	0.219		0.222		1		M
Cobalt	mg/L	0 - 20	0.217		0.222		2		M
Copper	mg/L	0 - 20	0.209		0.213		2		M
Lead	mg/L	0 - 20	0.225		0.228		1		M
Manganese	mg/L	0 - 20	0.247		0.250		1		M
Molybdenum	mg/L	0 - 20	0.221		0.225		2		M
Nickel	mg/L	0 - 20	0.211		0.216		2		M
Selenium	mg/L	0 - 20	0.203		0.203		0		M
Silver	mg/L	0 - 20	0.107		0.109		2		M
Thallium	mg/L	0 - 20	0.2193		0.2233		2		M
Vanadium	mg/L	0 - 20	0.221		0.226		2		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173829									
	Antimony	mg/L	0.2220	0.2222		100		80 - 120	M
	Arsenic	mg/L	0.2220	0.2083		94		80 - 120	M
	Barium	mg/L	2.2220	2.1303		96		80 - 120	M
	Beryllium	mg/L	0.2220	0.2018		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2091		94		80 - 120	M
	Chromium	mg/L	0.2220	0.2256		102		80 - 120	M
	Cobalt	mg/L	0.2220	0.2268		102		80 - 120	M
	Copper	mg/L	0.2220	0.2222		100		80 - 120	M
	Lead	mg/L	0.2220	0.2251		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2274		102		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2224		100		80 - 120	M
	Nickel	mg/L	0.2220	0.2225		100		80 - 120	M
	Selenium	mg/L	0.2220	0.1924		87		80 - 120	M
	Silver	mg/L	0.1110	0.1121		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2206		99		80 - 120	M
	Vanadium	mg/L	0.2220	0.2240		101		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71284						
2173828	MB for HBN 71284 [MDIG/50704	MB	QC-WAT	5/6/15	45.0	50.0	
2173829	LCS for HBN 71284 [MDIG/50704	LCS	QC-WAT	5/6/15	45.0	50.0	
2068544003	MRC-MW-37A-050415	SAM	WATER	5/6/15	45.0	50.0	
2068544003S	MRC-MW-37A-050415S	MS	WATER	5/6/15	45.0	50.0	
2068544003SD	MRC-MW-37A-050415SD	MSD	WATER	5/6/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2250																										
BLK	1.00	2254			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2258			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2302			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2305			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2309			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2313			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2316			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	2320			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	2324			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	2328																										
ZZZZZZ	1.00	2332																										
ZZZZZZ	1.00	2335																										
ICS-A2	1.00	2339			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB2	1.00	2343			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	2347																										
ZZZZZZ	1.00	2350																										
ZZZZZZ	5.00	2354																										
ZZZZZZ	5.00	2358																										
ZZZZZZ	5.00	0002																										
ZZZZZZ	5.00	0005																										
ZZZZZZ	5.00	0009																										
ZZZZZZ	5.00	0013																										
ZZZZZZ	5.00	0017																										
ZZZZZZ	5.00	0020																										
ZZZZZZ	5.00	0024																										
ZZZZZZ	5.00	0028																										
ZZZZZZ	1.00	0032																										
ZZZZZZ	1.00	0036																										
ZZZZZZ	1.00	0039																										
ZZZZZZ	5.00	0043																										
ZZZZZZ	5.00	0047																										
ZZZZZZ	5.00	0050																										
ZZZZZZ	5.00	0054																										
ZZZZZZ	5.00	0058																										
ZZZZZZ	25.00	0102																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0106																								
ZZZZZZ	5.00	0109																								
ZZZZZZ	5.00	0113																								
ZZZZZZ	5.00	0117																								
ZZZZZZ	1.00	0121																								
ZZZZZZ	1.00	0124																								
ZZZZZZ	1.00	0128																								
ZZZZZZ	5.00	0132																								
ZZZZZZ	5.00	0136																								
ZZZZZZ	5.00	0140																								
ZZZZZZ	5.00	0143																								
ZZZZZZ	5.00	0147																								
ZZZZZZ	5.00	0151																								
ZZZZZZ	5.00	0155																								
ZZZZZZ	5.00	0159																								
ZZZZZZ	5.00	0202																								
ZZZZZZ	5.00	0206																								
ZZZZZZ	1.00	0210																								
ZZZZZZ	1.00	0214																								
ZZZZZZ	1.00	0217																								
ZZZZZZ	25.00	0221																								
ZZZZZZ	5.00	0225																								
ZZZZZZ	5.00	0229																								
ZZZZZZ	5.00	0233																								
ZZZZZZ	5.00	0237																								
ZZZZZZ	5.00	0240																								
ZZZZZZ	5.00	0244																								
ZZZZZZ	5.00	0248																								
ZZZZZZ	5.00	0252																								
ZZZZZZ	5.00	0256																								
ZZZZZZ	1.00	0259																								
ZZZZZZ	1.00	0303																								
ZZZZZZ	1.00	0307																								
ZZZZZZ	5.00	0311																								
ZZZZZZ	5.00	0314																								
ZZZZZZ	5.00	0318																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	0322																										
ZZZZZZ	5.00	0326																										
ZZZZZZ	5.00	0330																										
ZZZZZZ	5.00	0334																										
ZZZZZZ	5.00	0337																										
ZZZZZZ	5.00	0341																										
ZZZZZZ	5.00	0345																										
CCV5	1.00	0349			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	0353			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0400																										
ZZZZZZ	5.00	0404																										
2173828	1.00	0408			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2173829	1.00	0412			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068544003	1.00	0415			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068544003S	1.00	0419			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068544003SD	1.00	0423			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0426																										
ZZZZZZ	1.00	0430																										
ZZZZZZ	1.00	0434																										
CCV6	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	0442			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0445			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0449																										
ZZZZZZ	1.00	0453																										
ZZZZZZ	1.00	0457																										
ZZZZZZ	10.00	0501																										
ZZZZZZ	10.00	0504																										
ZZZZZZ	1.00	0508																										
ZZZZZZ	1.00	0512																										
ZZZZZZ	1.00	0515																										
ZZZZZZ	1.00	0519																										
ZZZZZZ	1.00	0523																										
ZZZZZZ	1.00	0527																										
ZZZZZZ	1.00	0530																										
ZZZZZZ	1.00	0534																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0538																								
ZZZZZZ	1.00	0541																								
ZZZZZZ	5.00	0545																								
ZZZZZZ	1.00	0549																								
ZZZZZZ	1.00	0553																								
ZZZZZZ	1.00	0556																								
ZZZZZZ	1.00	0600																								
ZZZZZZ	1.00	0604																								
ZZZZZZ	1.00	0608																								
ZZZZZZ	1.00	0611																								
ZZZZZZ	1.00	0615																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-029

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	22:50																									
BLK	1.00	22:54					X																				
STANDARD 1	1.00	22:58					X																				
STANDARD 2	1.00	23:02					X																				
STANDARD 3	1.00	23:05					X																				
STANDARD 4	1.00	23:09					X																				
STANDARD 5	1.00	23:13					X																				
ICV	1.00	23:16					X																				
ICB1	1.00	23:20					X																				
LLICV	1.00	23:24					X																				
ZZZZZZ	1.00	23:28																									
ZZZZZZ	1.00	23:32																									
ZZZZZZ	1.00	23:35																									
ICS-A2	1.00	23:39					X																				
ICS-AB2	1.00	23:43					X																				
ZZZZZZ	1.00	23:47																									
ZZZZZZ	1.00	23:50																									
ZZZZZZ	5.00	23:54																									
ZZZZZZ	5.00	23:58																									
ZZZZZZ	5.00	00:02																									
ZZZZZZ	5.00	00:05																									
ZZZZZZ	5.00	00:09																									
ZZZZZZ	5.00	00:13																									
ZZZZZZ	5.00	00:17																									
ZZZZZZ	5.00	00:20																									
ZZZZZZ	5.00	00:24																									
ZZZZZZ	5.00	00:28																									
ZZZZZZ	1.00	00:32																									
ZZZZZZ	1.00	00:36																									
ZZZZZZ	1.00	00:39																									
ZZZZZZ	5.00	00:43																									

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM029|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-029

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes
ZZZZZZ	5.00	00:47		
ZZZZZZ	5.00	00:50		
ZZZZZZ	5.00	00:54		
ZZZZZZ	5.00	00:58		
ZZZZZZ	25.00	01:02		
ZZZZZZ	5.00	01:06		
ZZZZZZ	5.00	01:09		
ZZZZZZ	5.00	01:13		
ZZZZZZ	5.00	01:17		
ZZZZZZ	1.00	01:21		
ZZZZZZ	1.00	01:24		
ZZZZZZ	1.00	01:28		
ZZZZZZ	5.00	01:32		
ZZZZZZ	5.00	01:36		
ZZZZZZ	5.00	01:40		
ZZZZZZ	5.00	01:43		
ZZZZZZ	5.00	01:47		
ZZZZZZ	5.00	01:51		
ZZZZZZ	5.00	01:55		
ZZZZZZ	5.00	01:59		
ZZZZZZ	5.00	02:02		
ZZZZZZ	5.00	02:06		
ZZZZZZ	1.00	02:10		
ZZZZZZ	1.00	02:14		
ZZZZZZ	1.00	02:17		
ZZZZZZ	25.00	02:21		
ZZZZZZ	5.00	02:25		
ZZZZZZ	5.00	02:29		
ZZZZZZ	5.00	02:33		
ZZZZZZ	5.00	02:37		
ZZZZZZ	5.00	02:40		

Analytes: B, AU, LI, MO, OS, PD, P, PT, SI, S, SN, SR, TI, U, W, IN, TE, ZR

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM029|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-029

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	5.00	02:44																										
ZZZZZZ	5.00	02:48																										
ZZZZZZ	5.00	02:52																										
ZZZZZZ	5.00	02:56																										
ZZZZZZ	1.00	02:59																										
ZZZZZZ	1.00	03:03																										
ZZZZZZ	1.00	03:07																										
ZZZZZZ	5.00	03:11																										
ZZZZZZ	5.00	03:14																										
ZZZZZZ	5.00	03:18																										
ZZZZZZ	5.00	03:22																										
ZZZZZZ	5.00	03:26																										
ZZZZZZ	5.00	03:30																										
ZZZZZZ	5.00	03:34																										
ZZZZZZ	5.00	03:37																										
ZZZZZZ	5.00	03:41																										
ZZZZZZ	5.00	03:45																										
CCV5	1.00	03:49					X																					
CCB5	1.00	03:53					X																					
LLCCV	1.00	03:56					X																					
ZZZZZZ	5.00	04:00																										
ZZZZZZ	5.00	04:04																										
2173828	1.00	04:08					X																					
2173829	1.00	04:12					X																					
2068544003	1.00	04:15					X																					
2068544003S	1.00	04:19					X																					
2068544003SD	1.00	04:23					X																					
ZZZZZZ	1.00	04:26																										
ZZZZZZ	1.00	04:30																										
ZZZZZZ	1.00	04:34																										
CCV6	1.00	04:38					X																					

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM029|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-029

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
CCB6	1.00	04:42					X																					
LLCCV	1.00	04:45					X																					
ZZZZZZ	1.00	04:49																										
ZZZZZZ	1.00	04:53																										
ZZZZZZ	1.00	04:57																										
ZZZZZZ	10.00	05:01																										
ZZZZZZ	10.00	05:04																										
ZZZZZZ	1.00	05:08																										
ZZZZZZ	1.00	05:12																										
ZZZZZZ	1.00	05:15																										
ZZZZZZ	1.00	05:19																										
ZZZZZZ	1.00	05:23																										
ZZZZZZ	1.00	05:27																										
ZZZZZZ	1.00	05:30																										
ZZZZZZ	1.00	05:34																										
ZZZZZZ	1.00	05:38																										
ZZZZZZ	1.00	05:41																										
ZZZZZZ	5.00	05:45																										
ZZZZZZ	1.00	05:49																										
ZZZZZZ	1.00	05:53																										
ZZZZZZ	1.00	05:56																										
ZZZZZZ	1.00	06:00																										
ZZZZZZ	1.00	06:04																										
ZZZZZZ	1.00	06:08																										
ZZZZZZ	1.00	06:11																										
ZZZZZZ	1.00	06:15																										

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2250												
BLK	BLK	2254	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2258	101		99		100		100		101		99	
STANDARD 2	STANDARD 2	2302	103		100		102		102		104		93	
STANDARD 3	STANDARD 3	2305	102		99		100		100		102		99	
STANDARD 4	STANDARD 4	2309	101		98		99		100		102		100	
STANDARD 5	STANDARD 5	2313	101		98		99		99		102		99	
ICV	ICV	2316	102		99		101		101		104		102	
ICB1	ICB	2320	101		100		101		101		103		102	
LLICV	LLICV	2324	101		100		100		100		101		102	
ICS-A1	ZZZZZZ	2328												
ICS-AB1	ZZZZZZ	2332												
CHECK	ZZZZZZ	2335												
ICS-A2	ICSA	2339	93		101		97		102		108		102	
ICS-AB2	ICSAB	2343	93		101		97		101		103		101	
CHECK	ZZZZZZ	2347												
CHECK	ZZZZZZ	2350												
2173632	ZZZZZZ	2354												
2173634	ZZZZZZ	2358												
2173662	ZZZZZZ	0002												
2173664	ZZZZZZ	0005												
2173692	ZZZZZZ	0009												
2173694	ZZZZZZ	0013												
2068641001	ZZZZZZ	0017												
2068490001	ZZZZZZ	0020												
2068490002	ZZZZZZ	0024												
2068490003	ZZZZZZ	0028												
CCV1	ZZZZZZ	0032												
CCB1	ZZZZZZ	0036												
LLCCV	ZZZZZZ	0039												
2068843001	ZZZZZZ	0043												
2173697	ZZZZZZ	0047												
2173698	ZZZZZZ	0050												
2068843001P	ZZZZZZ	0054												
2173634	ZZZZZZ	0058												
2068641001	ZZZZZZ	0102												
2068597001	ZZZZZZ	0106												
2173637	ZZZZZZ	0109												
2173638	ZZZZZZ	0113												
2173637	ZZZZZZ	0117												
CCV2	ZZZZZZ	0121												
CCB2	ZZZZZZ	0124												
LLCCV	ZZZZZZ	0128												
2068597001P	ZZZZZZ	0132												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068597002	ZZZZZZ	0136												
2068597003	ZZZZZZ	0140												
2068597004	ZZZZZZ	0143												
2068597005	ZZZZZZ	0147												
2068597006	ZZZZZZ	0151												
2068597007	ZZZZZZ	0155												
2068597008	ZZZZZZ	0159												
2068597009	ZZZZZZ	0202												
2068740001	ZZZZZZ	0206												
CCV3	ZZZZZZ	0210												
CCB3	ZZZZZZ	0214												
LLCCV	ZZZZZZ	0217												
2068740001L	ZZZZZZ	0221												
2068740002	ZZZZZZ	0225												
2068740003	ZZZZZZ	0229												
2068740004	ZZZZZZ	0233												
2068740005	ZZZZZZ	0237												
2068740006	ZZZZZZ	0240												
2068740007	ZZZZZZ	0244												
2068740008	ZZZZZZ	0248												
2068740009	ZZZZZZ	0252												
2173667	ZZZZZZ	0256												
CCV4	ZZZZZZ	0259												
CCB4	ZZZZZZ	0303												
LLCCV	ZZZZZZ	0307												
2173668	ZZZZZZ	0311												
2068740009P	ZZZZZZ	0314												
2173668	ZZZZZZ	0318												
2068740010	ZZZZZZ	0322												
2068731001	ZZZZZZ	0326												
2068541004	ZZZZZZ	0330												
2068541005	ZZZZZZ	0334												
2068541006	ZZZZZZ	0337												
2068541007	ZZZZZZ	0341												
2068541008	ZZZZZZ	0345												
CCV5	CCV	0349	109		108		111		110		107		114	
CCB5	CCB	0353	107		108		108		107		105		112	
LLCCV	LLCCV	0356	107		109		109		108		99		104	
2068541009	ZZZZZZ	0400												
2068541010	ZZZZZZ	0404												
2173828	MB for HBN 71284	0408	107		125		107		106		102		110	
2173829	LCS for HBN 7128	0412	104		129		104		103		99		109	
2068544003	MRC-MW-37A-05041	0415	101		126		102		100		97		105	
2068544003S	MRC-MW-37A-05041	0419	100		124		102		100		98		106	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068544003S	MRC-MW-37A-05041	0423	100		125		102		100		98		106	
2068842002	ZZZZZZ	0426												
2068842003	ZZZZZZ	0430												
2068842004	ZZZZZZ	0434												
CCV6	CCV	0438	112		111		112		112		112		111	
CCB6	CCB	0442	109		108		110		109		108		110	
LLCCV	LLCCV	0445	110		110		111		110		109		112	
2068842005	ZZZZZZ	0449												
2068842006	ZZZZZZ	0453												
2068842007	ZZZZZZ	0457												
2068842002	ZZZZZZ	0501												
2068842003	ZZZZZZ	0504												
2068842005	ZZZZZZ	0508												
2068514001	ZZZZZZ	0512												
2068514002	ZZZZZZ	0515												
2068712001	ZZZZZZ	0519												
2068712002	ZZZZZZ	0523												
CCV7	ZZZZZZ	0527												
CCB7	ZZZZZZ	0530												
LLCCV	ZZZZZZ	0534												
2068712003	ZZZZZZ	0538												
2068713001	ZZZZZZ	0541												
2068713001L	ZZZZZZ	0545												
2068713002	ZZZZZZ	0549												
2068713003	ZZZZZZ	0553												
2068713004	ZZZZZZ	0556												
2068714001	ZZZZZZ	0600												
2068714002	ZZZZZZ	0604												
CCV8	ZZZZZZ	0608												
CCB8	ZZZZZZ	0611												
LLCCV	ZZZZZZ	0615												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2250												
BLK	2254	100											
STANDARD 1	2258	100											
STANDARD 2	2302	102											
STANDARD 3	2305	101											
STANDARD 4	2309	100											
STANDARD 5	2313	100											
ICV	2316	101											
ICB	2320	102											
LLICV	2324	101											
ZZZZZZ	2328												
ZZZZZZ	2332												
ZZZZZZ	2335												
ICSA	2339	102											
ICSAB	2343	102											
ZZZZZZ	2347												
ZZZZZZ	2350												
ZZZZZZ	2354												
ZZZZZZ	2358												
ZZZZZZ	0002												
ZZZZZZ	0005												
ZZZZZZ	0009												
ZZZZZZ	0013												
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0028												
ZZZZZZ	0032												
ZZZZZZ	0036												
ZZZZZZ	0039												
ZZZZZZ	0043												
ZZZZZZ	0047												
ZZZZZZ	0050												
ZZZZZZ	0054												
ZZZZZZ	0058												
ZZZZZZ	0102												
ZZZZZZ	0106												
ZZZZZZ	0109												
ZZZZZZ	0113												
ZZZZZZ	0117												
ZZZZZZ	0121												
ZZZZZZ	0124												
ZZZZZZ	0128												
ZZZZZZ	0132												
ZZZZZZ	0136												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0140												
ZZZZZZ	0143												
ZZZZZZ	0147												
ZZZZZZ	0151												
ZZZZZZ	0155												
ZZZZZZ	0159												
ZZZZZZ	0202												
ZZZZZZ	0206												
ZZZZZZ	0210												
ZZZZZZ	0214												
ZZZZZZ	0217												
ZZZZZZ	0221												
ZZZZZZ	0225												
ZZZZZZ	0229												
ZZZZZZ	0233												
ZZZZZZ	0237												
ZZZZZZ	0240												
ZZZZZZ	0244												
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
ZZZZZZ	0307												
ZZZZZZ	0311												
ZZZZZZ	0314												
ZZZZZZ	0318												
ZZZZZZ	0322												
ZZZZZZ	0326												
ZZZZZZ	0330												
ZZZZZZ	0334												
ZZZZZZ	0337												
ZZZZZZ	0341												
ZZZZZZ	0345												
CCV	0349	110											
CCB	0353	109											
LLCCV	0356	109											
ZZZZZZ	0400												
ZZZZZZ	0404												
MB for HBN 71284	0408	109											
LCS for HBN 7128	0412	108											
MRC-MW-37A-05041	0415	108											
MRC-MW-37A-05041	0419	107											
MRC-MW-37A-05041	0423	108											
ZZZZZZ	0426												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-029

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0430												
ZZZZZZ	0434												
CCV	0438	113											
CCB	0442	111											
LLCCV	0445	112											
ZZZZZZ	0449												
ZZZZZZ	0453												
ZZZZZZ	0457												
ZZZZZZ	0501												
ZZZZZZ	0504												
ZZZZZZ	0508												
ZZZZZZ	0512												
ZZZZZZ	0515												
ZZZZZZ	0519												
ZZZZZZ	0523												
ZZZZZZ	0527												
ZZZZZZ	0530												
ZZZZZZ	0534												
ZZZZZZ	0538												
ZZZZZZ	0541												
ZZZZZZ	0545												
ZZZZZZ	0549												
ZZZZZZ	0553												
ZZZZZZ	0556												
ZZZZZZ	0600												
ZZZZZZ	0604												
ZZZZZZ	0608												
ZZZZZZ	0611												
ZZZZZZ	0615												

Total Metals by 6010C Summary Forms

6010C 3015
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.942	1.000	94		90 - 110	P	5/8/2015	09:58	050815 3015
CCV	Iron	2.505	2.500	100		90 - 110	P	5/8/2015	10:16	050815 3015
CCV	Iron	2.489	2.500	100		90 - 110	P	5/8/2015	14:15	050815 3015
CCV	Iron	2.501	2.500	100		90 - 110	P	5/8/2015	14:59	050815 3015
CCV	Iron	2.439	2.500	98		90 - 110	P	5/8/2015	16:15	050815 3015
LLCCV	Iron	0.061	0.060	102		70 - 130	P	5/8/2015	17:44	050815 3015

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.067	0.060	112		70 - 130	P	5/8/2015	10:13	050815 301

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	10:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	14:18	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	15:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	16:18	050815 3015

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2174195			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/8/2015	14:22	050815 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	10:23	050815 3015
ICSAB									
	Iron	119.3	125.0	95		80 - 120%	5/8/2015	10:27	050815 3015
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	17:53	050815 3015
ICSAB									
	Iron	115.5	125.0	92		80 - 120%	5/8/2015	17:57	050815 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2174196									
	Iron	mg/L	1.11	1.096		99		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71519						
2174195	MB for HBN 71519 [MDIG/50713	MB	QC-WAT	5/7/15	45.0	50.0	
2174196	LCS for HBN 71519 [MDIG/50713	LCS	QC-WAT	5/7/15	45.0	50.0	
2068544003	MRC-MW-37A-050415	SAM	WATER	5/7/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0937												X													
ICAL2	1.00	0941												X													
ICAL3	1.00	0945												X													
ICAL4	1.00	0949												X													
ICAL5	1.00	0952												X													
ICV1	1.00	0958												X													
ICB1	1.00	1002												X													
ZZZZZZ	1.00	1009																									
CRDL2	1.00	1013												X													
CCV1	1.00	1016												X													
HIGH	1.00	1020												X													
ICS-A1	1.00	1023												X													
ICS-AB1	1.00	1027												X													
ZZZZZZ	1.00	1033																									
ZZZZZZ	1.00	1036																									
ZZZZZZ	200.00	1040																									
ZZZZZZ	10.00	1043																									
ZZZZZZ	50.00	1047																									
ZZZZZZ	10.00	1051																									
ZZZZZZ	5.00	1055																									
ZZZZZZ	5.00	1059																									
ZZZZZZ	5.00	1102																									
ZZZZZZ	1.00	1106																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1204																									
ZZZZZZ	5.00	1208																									
ZZZZZZ	5.00	1211																									
ZZZZZZ	5.00	1215																									
ZZZZZZ	5.00	1219																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1223																									
ZZZZZZ	5.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	5.00	1238																									
ZZZZZZ	5.00	1241																									
ZZZZZZ	5.00	1245																									
ZZZZZZ	5.00	1249																									
ZZZZZZ	10.00	1253																									
ZZZZZZ	5.00	1257																									
ZZZZZZ	5.00	1301																									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1312																									
ZZZZZZ	1.00	1316																									
ZZZZZZ	1.00	1319																									
ZZZZZZ	1.00	1326																									
ZZZZZZ	5.00	1329																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1356																									
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1404																									
ZZZZZZ	1.00	1407																									
ZZZZZZ	1.00	1411																									
CCV5	1.00	1415												X													
CCB5	1.00	1418												X													
2174195	1.00	1422												X													
2174196	1.00	1426												X													
ZZZZZZ	1.00	1429																									
2068544003	1.00	1433												X													
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1444																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1452																									
ZZZZZZ	1.00	1455																									
CCV6	1.00	1459											X														
CCB6	1.00	1502											X														
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1514																									
ZZZZZZ	1.00	1517																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1545																									
ZZZZZZ	1.00	1548																									
ZZZZZZ	2.00	1552																									
ZZZZZZ	1.00	1556																									
ZZZZZZ	1.00	1600																									
ZZZZZZ	1.00	1604																									
ZZZZZZ	1.00	1607																									
ZZZZZZ	1.00	1611																									
CCV8	1.00	1615											X														
CCB8	1.00	1618											X														
LLCCV	1.00	1744											X														
ZZZZZZ	1.00	1747																									
ICS-A3	1.00	1753											X														
ICS-AB3	1.00	1757											X														
ZZZZZZ	1.00	1801																									

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/7/2015	12:36	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:01	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:14	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:27	050715W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	12:37	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:02	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:15	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:28	050715W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173295			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/7/2015	13:11	050715W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173296									
	Mercury	mg/L	0.0020	0.0018		90		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-029

Contract: TMM029|112IC06247 **Lab Code:** CAS

Method: CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71111						
2173295	MB for HBN 71111 [MDIG/50685	MB	QC-WAT	5/7/15	25.0	25.0	
2173296	LCS for HBN 71111 [MDIG/50685	LCS	QC-WAT	5/7/15	25.0	25.0	
2068544003	MRC-MW-37A-050415	SAM	WATER	5/7/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1229																X								
Standard #1 (0.2ppb	1.00	1230																X								
	1.00	1231																X								
	1.00	1232																X								
	1.00	1233																X								
	1.00	1234																X								
ICV1	1.00	1236																X								
ICB1	1.00	1237																X								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1239																								
ZZZZZZ	1.00	1240																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
CCV2	1.00	1301																X								
CCB2	1.00	1302																X								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1306																								
ZZZZZZ	1.00	1307																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1308																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1310																										
2173295	1.00	1311																X										
2173296	1.00	1312																X										
ZZZZZZ	1.00	1313																										
CCV3	1.00	1314																X										
CCB3	1.00	1315																X										
ZZZZZZ	1.00	1316																										
ZZZZZZ	1.00	1318																										
ZZZZZZ	1.00	1319																										
ZZZZZZ	1.00	1320																										
ZZZZZZ	1.00	1321																										
ZZZZZZ	1.00	1322																										
ZZZZZZ	1.00	1323																										
ZZZZZZ	1.00	1324																										
ZZZZZZ	1.00	1325																										
2068544003	1.00	1326																X										
CCV4	1.00	1327																X										
CCB4	1.00	1328																X										
ZZZZZZ	1.00	1330																										
ZZZZZZ	1.00	1331																										
ZZZZZZ	1.00	1332																										
ZZZZZZ	1.00	1333																										
ZZZZZZ	1.00	1334																										
ZZZZZZ	1.00	1335																										
ZZZZZZ	1.00	1336																										
ZZZZZZ	1.00	1337																										
ZZZZZZ	1.00	1338																										
ZZZZZZ	1.00	1339																										
ZZZZZZ	1.00	1340																										
ZZZZZZ	1.00	1342																										
ZZZZZZ	1.00	1343																										
ZZZZZZ	1.00	1344																										
ZZZZZZ	1.00	1345																										
ZZZZZZ	1.00	1346																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1347																										
ZZZZZZ	1.00	1348																										
ZZZZZZ	1.00	1349																										
ZZZZZZ	1.00	1350																										
ZZZZZZ	1.00	1352																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	1.00	1354																										
ZZZZZZ	1.00	1355																										
ZZZZZZ	1.00	1356																										
ZZZZZZ	1.00	1357																										
ZZZZZZ	1.00	1358																										
ZZZZZZ	1.00	1359																										
ZZZZZZ	1.00	1400																										
ZZZZZZ	1.00	1401																										
ZZZZZZ	1.00	1402																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1404																										
ZZZZZZ	1.00	1405																										
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1407																										
ZZZZZZ	1.00	1409																										
ZZZZZZ	1.00	1410																										
ZZZZZZ	1.00	1411																										
ZZZZZZ	1.00	1412																										
ZZZZZZ	1.00	1413																										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1417																										
ZZZZZZ	1.00	1418																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1420																										
ZZZZZZ	1.00	1421																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	1.00	1423																										
ZZZZZZ	1.00	1424																										
ZZZZZZ	1.00	1425																										
ZZZZZZ	1.00	1426																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1430																								
ZZZZZZ	1.00	1432																								
ZZZZZZ	1.00	1433																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	1.00	1435																								
ZZZZZZ	1.00	1436																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1438																								
ZZZZZZ	1.00	1439																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1441																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1448																								
ZZZZZZ	1.00	1451																								
ZZZZZZ	1.00	1452																								
ZZZZZZ	1.00	1453																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1456																								
ZZZZZZ	1.00	1457																								
ZZZZZZ	1.00	1459																								
ZZZZZZ	50.00	1500																								
ZZZZZZ	50.00	1501																								
ZZZZZZ	50.00	1502																								
ZZZZZZ	50.00	1503																								
ZZZZZZ	1.00	1509																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1513																								
ZZZZZZ	1.00	1514																								
ZZZZZZ	1.00	1515																								
ZZZZZZ	1.00	1516																								
ZZZZZZ	1.00	1517																								
ZZZZZZ	1.00	1518																								
ZZZZZZ	1.00	1519																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM029|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-029

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1520																								
ZZZZZZ	50.00	1521																								
ZZZZZZ	50.00	1522																								
ZZZZZZ	1.00	1525																								
ZZZZZZ	1.00	1526																								

Total Alkalinity by Method 2320B Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2320B SDG No.: TMM-029

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/5/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/5/15	(2)	(1)5/5/15	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Alkalinity	1.33	J	3.12	J	1.47	J						

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 2320B

SDG No.: TMM-029

Instrument ID: PC-Titration Plus

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)
Total Alkalinity	50	46	93		90-110	50	48	96		51	103		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Ammonia by Method 4500NH3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D SDG No.: TMM-029

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/7/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/7/15	(2)	(1)5/7/15	(2)	(1)	(2)	Preparation Blank A ID: 2174296 (1)5/7/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.10	U	0.050	J	0.10	U			0.090	J		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-029

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration								
	True Conc.	Conc. Recovered (1)5/7/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/7/15	Recovery (%)	(2)	Conc. Recovered (1)5/7/15	Recovery (%)	(2)	Acc. Limit (%)	
Total Ammonia-Nitrogen	10.0	9.34	93		90-110	10.0	9.43	94		9.19	92		90-110	

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 4500NH3D

SDG No.: TMM-029

Matrix (soil/water): water

Units: mg/L

Date Analyzed: 5/7/2015

Lab Sample ID: 2174297

Lab File ID: N/A

Instrument ID: ISE

GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.11	91		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Anions by Method 300 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-029

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)5/5/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/5/15	(2)	(1)5/5/15	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	1.0	U	1.0	U	1.0	U						
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U						
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U						
Sulfate	1.0	U	1.0	U	1.0	U						

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-029

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/6/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/6/15	(2)	(1)5/6/15	(2)	(1)5/6/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.11	J	0.14	J	0.15	J	0.15	J				
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Sulfate	0.08	J	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: ICS2100 (IC-7)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.3	101		90-110	20.0	--	--		20.1	100		90-110
Nitrite-Nitrogen	0.50	0.53	106		90-110	0.50	--	--		0.53	106		90-110
Nitrate-Nitrogen	2.50	2.52	101		90-110	2.50	--	--		2.49	100		90-110
Sulfate	20.0	20.2	101		90-110	20.0	--	--		20.2	101		90-110
Chloride	40.0	39.3	98		90-110	40.0	38.9	97		--	--		90-110
Nitrite-Nitrogen	1.00	1.06	106		90-110	1.00	1.09	109		--	--		90-110
Nitrate-Nitrogen	5.00	4.93	99		90-110	5.00	4.89	98		--	--		90-110
Sulfate	40.0	38.8	97		90-110	40.0	38.6	96		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	19.9	100		90-110	20.0	--	--		20.4	102		90-110
Nitrite-Nitrogen	0.50	0.55	110		90-110	0.50	--	--		0.53	106		90-110
Nitrate-Nitrogen	2.50	2.44	98		90-110	2.50	--	--		2.49	100		90-110
Sulfate	20.0	19.9	99		90-110	20.0	--	--		20.2	101		90-110
Chloride	40.0	38.7	97		90-110	40.0	39.2	98		--	--		90-110
Nitrite-Nitrogen	1.00	0.98	98		90-110	1.00	1.05	105		--	--		90-110
Nitrate-Nitrogen	5.00	4.81	96		90-110	5.00	4.87	97		--	--		90-110
Sulfate	40.0	41.7	104		90-110	40.0	38.2	95		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: ICS2100 (IC-7)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.35	94		90-110	2.50	--	--		2.37	95		90-110
Nitrite-Nitrogen	0.50	0.46	92		90-110	0.50	--	--		0.50	100		90-110
Nitrate-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.48	96		90-110
Sulfate	2.50	2.45	98		90-110	2.50	--	--		2.44	98		90-110
Chloride	5.00	4.89	98		90-110	5.00	4.92	98		--	--		90-110
Nitrite-Nitrogen	1.00	0.96	96		90-110	1.00	0.99	99		--	--		90-110
Nitrate-Nitrogen	1.00	0.97	97		90-110	1.00	0.96	96		--	--		90-110
Sulfate	5.00	4.99	100		90-110	5.00	4.99	100		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.37	95		90-110	2.50	--	--		2.48	99		90-110
Nitrite-Nitrogen	0.50	0.49	98		90-110	0.50	--	--		0.51	102		90-110
Nitrate-Nitrogen	0.50	0.47	94		90-110	0.50	--	--		0.48	96		90-110
Sulfate	2.50	2.51	100		90-110	2.50	--	--		2.48	99		90-110
Chloride	5.00	4.77	95		90-110	5.00	4.86	97		--	--		90-110
Nitrite-Nitrogen	1.00	1.05	105		90-110	1.00	1.05	105		--	--		90-110
Nitrate-Nitrogen	1.00	0.96	96		90-110	1.00	0.97	97		--	--		90-110
Sulfate	5.00	4.97	99		90-110	5.00	5.18	104		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Continuing Calibration												
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)		Recovery (%)	(2)	Conc. Recovered (1)		Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	--	--										90-110
Nitrite-Nitrogen	0.50	--	--										90-110
Nitrate-Nitrogen	2.50	--	--										90-110
Sulfate	20.0	--	--										90-110
Chloride	40.0	39.5	99										90-110
Nitrite-Nitrogen	1.00	1.08	108										90-110
Nitrate-Nitrogen	5.00	4.88	98										90-110
Sulfate	40.0	38.3	96										90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-029

Instrument ID: DX-500
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	0.50	--	--								90-110
Sulfate	2.50	--	--								90-110
Chloride	5.00	4.92	98								90-110
Nitrite-Nitrogen	1.00	1.09	109								90-110
Nitrate-Nitrogen	1.00	0.97	97								90-110
Sulfate	5.00	5.01	100								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-029
Matrix (soil/water):	water	Lab Sample ID:	2173084
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	5/5/2015	Instrument ID:	ICS2100 (IC-7)
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	20.2	101		90-110
Nitrite-nitrogen	0.50	0.55	110		90-110
Nitrate-nitrogen	2.50	2.50	100		90-110
Sulfate	20.0	20.2	101		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-029
Matrix (soil/water):	water	Lab Sample ID:	2173645
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	5/6/2015	Instrument ID:	DX-500
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	20.1	101		90-110
Nitrite-nitrogen	0.50	0.55	110		90-110
Nitrate-nitrogen	2.50	2.48	99		90-110
Sulfate	20.0	20.1	101		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method:	300.0	SDG No.:	TMM-029
Matrix (soil/water):	water	Lab Sample ID:	SSL
Units:	mg/L	Lab File ID:	N/A
Date Analyzed:	5/5/2015	Instrument ID:	ICS2100 (IC-7)
		GC Column:	N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.41	96		90-110
Nitrite-nitrogen	0.50	0.51	102		90-110
Nitrate-nitrogen	0.50	0.49	98		90-110
Sulfate	2.50	2.48	99		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-029

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/6/2015
Instrument ID: DX-500
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.42	97		90-110
Nitrite-nitrogen	0.50	0.53	106		90-110
Nitrate-nitrogen	0.50	0.50	100		90-110
Sulfate	2.50	2.47	99		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Dissolved Total Organic Carbon by Method 9060A Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 9060A

SDG No.: TMM-029

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/6/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/6/15	(2)	(1)5/6/15	(2)	(1)5/6/15	(2)	Preparation Blank A ID: DISS BLANK (1)5/6/15	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U	1.0	U	--	--		
TOC, Dissolved	--	--	--	--	--	--	--	--	1.0	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 4B2
Inorganic Blank Summary

Analysis Method: 9060A SDG No.: TMM-029

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Continuing Calibration Blanks (mg/L) (1)5/6/15	(2)	(1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U										
TOC, Dissolved	--	--										

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A
SDG No.: TMM-029

Instrument ID: Vario TOC
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.96	96		85-115	5.00	5.19	104		--	--		90-110
						8.00	--	--		8.24	103		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A

SDG No.: TMM-029

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)5/6/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	5.00	--	--		5.36	107					90-110
	8.00	8.49	106		--	--					90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 9060A

SDG No.: TMM-029

Matrix (soil/water): water

Units: mg/L

Date Analyzed: 5/6/2015

Lab Sample ID: 5.0 mg/L QC DISS

Lab File ID: N/A

Instrument ID: Vario TOC

GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Organic Carbon, Dissolved	5.00	5.11	102		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Total Dissolved Solidsby Method 2540C Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2540C SDG No.: TMM-021

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)	(2)	Continuing Calibration Blanks (mg/L) (1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2174384 (1) 5/7/15	(2)	Preparation Blank B ID: (1)	(2)
Total Dissolved Solids									5	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 2540C
SDG No.: TMM-029

Matrix (soil/water): water
Lab Sample ID: 2174385
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/7/2015
Instrument ID: N/A
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Dissolved Solids	500	495	99		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Orthophosphate by Method 365.3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 365.3 SDG No.: TMM-029

Prep Blank A Matrix (soil/water): _____ Units: _____
Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)5/5/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/5/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Orthophosphate	0.02	U	0.02	U								

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 365.3 SDG No.: TMM-029

Instrument ID: DR5000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/5/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Orthophosphate	0.200	0.205	102		90-110	0.200	--	--					90-110
						0.800	0.798	100					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

TETRA TECH **INTERNAL CORRESPONDENCE**

TO: **DATE:** **JUNE 24, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC & INORGANIC DATA VALIDATION – VOC/SVOC/ /METALS/PERCHLORATE**
LOCKHEED- MRC
SAMPLE DELIVERY GROUP (SDG) – 2068842R

SAMPLES: 5/Aqueous/VOC/

MRC-MW-17A-050515	MRC-MW-50A-050515	MRC-MW-69A-050515
MRC-MW-69B-050515	MRC-MW-DUP04-050515	TB-050515

3/Aqueous/1,4-dioxane

MRC-MW-17A-050515	MRC-MW-69A-050515	MRC-MW-69B-050515

6/Aqueous/ Metals

MRC-MW-17A-050515	MRC-MW-50A-050515	MRC-MW-67A-050515
MRC-MW-68A-050515	MRC-MW-69A-050515	MRC-MW-DUP04-050515

5/Aqueous/Perchlorate

MRC-MW-17A-050515	MRC-MW-50A-050515	MRC-MW-69A-050515
MRC-MW-69B-050515	MRC-MW-DUP04-050515	

Overview

The sample set for Lockheed- MRC, SDG 2068842R consisted of eight (8) aqueous environmental samples. Four (4) aqueous samples and a trip blank were analyzed for volatile organic compounds (VOC). Three (3) aqueous samples were analyzed for 1,4-dioxane. Six (6) aqueous samples were analyzed for total metals and five (5) aqueous samples were analyzed for perchlorate. There is one (1) field duplicate sample pair was associated with this SDG: MRC-MW-DUP04-050515 and MRC-MW-50A-050515.

The samples were collected by Tetra Tech, Inc. on May 5, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with EPA Methods SW-846 8260B, 6010C, 6020A, 7470A, 6850 and EPA Method 522 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/trip blanks, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, internal standard areas, chromatographic resolution, ICP Interference Analysis, serial dilution differences, compound identification, tentatively identified compounds, compound quantitation, Field Duplicate Imprecision and detection limits. Areas of concern are listed below.

Major

No major issues were identified.

Minor

- The trip blank contained contaminant.

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Bromomethane	0.39	1.34

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. Detected results less than the action level were qualified as (U).

- Contamination was detected in the preparation blank at the following maximum concentrations:

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Barium	0.00273	0.01365
Chromium	0.00083	0.00415

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. Detected results less than the action level were qualified as (U).

- The internal standard area of Ge-72 was greater than the 130% quality control limit in samples MRC-MW-17A-050515, MRC-MW-50A-050515, MRC-MW-68A-050515, MRC-MW-69A-050515 and MRC-MW-DUP04-050515. The detected and nondetecetd results associated with this internal standard were qualified as estimated (J) and (UJ), respectively.

Additional Comments

Contamination was detected in the laboratory method blank associated with batch 2173979.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Carbon disulfide	0.41	2.05
1,4-dichlorobenzene	0.33	1.65

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. No action was taken on the nondetected carbon disulfide and 1,4-dichlorobenzene results.

The matrix spike (MS) percent recovery (%R) of perchlorate was less than the lower quality control limit in spiked sample The matrix spike duplicate (MSD) %R and relative percent difference (RPD) were within quality control limits. No action was taken.

Detected results reported below the Reporting Limit (RL) but above the Method Detection Limit (MDL) were qualified as estimated, (J). Non-detected results were reported to the MDL.

EXECUTIVE SUMMARY

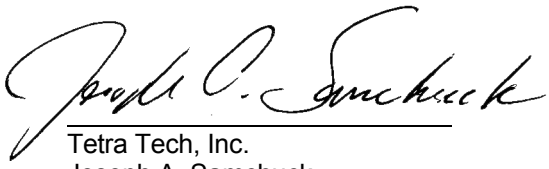
Laboratory Performance Issues: Contamination was detected in the metal preparation blank. The internal standard area of Ge-72 was greater than the 130% quality control limit in several samples.

Other Factors Affecting Data Quality: Trip blank contained bromomethane. Detected results reported below the Reporting Limit (RL) but above the Method Detection Limit (MDL) were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Ann Cognetti
Chemist/Data Validator



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-17A-050515			MRC-MW-50A-050515			MRC-MW-67A-050515			MRC-MW-68A-050515		
SDG: 2068842	LAB_ID	2068842006			2068842004			2068842003			2068842002		
FRACTION: M	SAMP_DATE	5/5/2015			5/5/2015			5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
ARSENIC		0.0012	J	NP	0.0021	J	NP	0.0096			0.0043	J	N
BARIUM		0.35			0.1			0.66			2.3		
BERYLLIUM		0.00038	J	P	0.0022			0.3			0.2		
CADMIUM		0.0011	UJ	N	0.0011	UJ	N	0.0091			0.01	J	N
CHROMIUM		0.0016	U	A	0.0012	U	A	0.0043			0.002	U	A
COBALT		0.063	J	N	0.046	J	N	8.6			1.5	J	N
COPPER		0.0035	J	NP	0.016	J	N	2			0.16	J	N
IRON		65.9			1.1			10.1			1.1		
LEAD		0.0022	U		0.0014	J	P	0.0089			0.0017	J	P
MANGANESE		8.2	J	N	0.26	J	N	14.5			7.2	J	N
MERCURY		0.0005	U		0.0005	U		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	UJ	N	0.0022	UJ	N	0.0022	U		0.0022	UJ	N
NICKEL		0.077	J	N	0.043	J	N	14.2			4.8	J	N
SELENIUM		0.0056	UJ	N	0.0084	J	N	0.032			0.016	J	N
SILVER		0.0022	UJ	N	0.0022	UJ	N	0.0022	U		0.00087	J	NP
THALLIUM		0.001	U		0.00051	J	P	0.0017			0.00049	J	P
VANADIUM		0.0022	UJ	N	0.0012	J	NP	0.0019	J	P	0.0012	J	NP

PROJ_NO: 06247	NSAMPLE	MRC-MW-69A-050515			MRC-MW-DUP04-050515		
SDG: 2068842	LAB_ID	2068842007			2068842005		
FRACTION: M	SAMP_DATE	5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				MRC-MW-50A-050515		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0024			0.0022	U	
ARSENIC		0.003	UJ	N	0.0017	J	NP
BARIUM		0.22			0.1		
BERYLLIUM		0.001	U		0.0021		
CADMIUM		0.00039	J	NP	0.0011	UJ	N
CHROMIUM		0.001	U	A	0.0013	U	A
COBALT		0.073	J	N	0.044	J	N
COPPER		0.0063	J	N	0.016	J	N
IRON		5.8			1		
LEAD		0.0028			0.0015	J	P
MANGANESE		3	J	N	0.25	J	N
MERCURY		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	UJ	N	0.0022	UJ	N
NICKEL		0.096	J	N	0.04	J	N
SELENIUM		0.0056	UJ	N	0.0085	J	N
SILVER		0.0022	UJ	N	0.0022	UJ	N
THALLIUM		0.001	U		0.00038	J	P
VANADIUM		0.0022	J	NP	0.0012	J	NP

PROJ_NO: 06247	NSAMPLE	MRC-MW-17A-050515			MRC-MW-50A-050515			MRC-MW-69A-050515			MRC-MW-69B-050515		
SDG: 2068842	LAB_ID	1512733003			1512733001			1512733004			1512733005		
FRACTION: MISC	SAMP_DATE	5/5/2015			5/5/2015			5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERCHLORATE		0.06	U		0.23			0.06	U		0.06	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP04-050515		
SDG: 2068842	LAB_ID	1512733002		
FRACTION: MISC	SAMP_DATE	5/5/2015		
MEDIA: WATER	QC_TYPE	FD		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF	MRC-MW-50A-050515		
PARAMETER		RESULT	VQL	QLCD
PERCHLORATE		0.27		

PROJ_NO: 06247	NSAMPLE	MRC-MW-17A-050515			MRC-MW-69A-050515			MRC-MW-69B-050515		
SDG: 2068842	LAB_ID	2068842006			2068842007			2068842008		
FRACTION: OS	SAMP_DATE	5/5/2015			5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		3.7			2			0.32		

PROJ_NO: 06247	NSAMPLE	MRC-MW-17A-050515			MRC-MW-50A-050515			MRC-MW-69A-050515			MRC-MW-69B-050515		
SDG: 2068842	LAB_ID	2068842006			2068842004			2068842007			2068842008		
FRACTION: OV	SAMP_DATE	5/5/2015			5/5/2015			5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U		1	U		1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U		2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U		7	U		7	U	
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		0.92	J	P	1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DIOXANE		320	U		320	U		320	U		320	U	
2-BUTANONE		2.6	J	P	10	U		10	U		10	U	
2-HEXANONE		5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		10	U		10	U		12.3			10	U	
BENZENE		163			0.95	J	P	0.34	J	P	1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		1	U		0.59	U	B	0.41	U	B	0.46	U	B
CARBON DISULFIDE		1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		2			0.46	J	P	1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
CYCLOHEXANE		37.9			1	U		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP04-050515			TB-050515		
SDG: 2068842	LAB_ID	2068842005			2068842001		
FRACTION: OV	SAMP_DATE	5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	MRC-MW-50A-050515					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U	
1,2-DIBROMOETHANE		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U	
1,4-DIOXANE		320	U		320	U	
2-BUTANONE		10	U		10	U	
2-HEXANONE		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U	
ACETONE		10	U		10	U	
BENZENE		0.82	J	P	1	U	
BROMOCHLOROMETHANE		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U	
BROMOFORM		1	U		1	U	
BROMOMETHANE		0.44	U	B	0.39	J	P
CARBON DISULFIDE		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U	
CHLOROBENZENE		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U	
CHLOROETHANE		1	U		1	U	
CHLOROFORM		1	U		1	U	
CHLOROMETHANE		1	U		1	U	
CIS-1,2-DICHLOROETHENE		0.53	J	P	1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U	
CYCLOHEXANE		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-17A-050515			MRC-MW-50A-050515			MRC-MW-69A-050515			MRC-MW-69B-050515		
SDG: 2068842	LAB_ID	2068842006			2068842004			2068842007			2068842008		
FRACTION: OV	SAMP_DATE	5/5/2015			5/5/2015			5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	
ETHYLBENZENE		64.7			1	U		1	U		1	U	
ISOPROPYLBENZENE		4.4			1	U		1	U		1	U	
M+P-XYLENES		35.4			2	U		2	U		2	U	
METHYL ACETATE		2	U		2	U		2	U		2	U	
METHYL CYCLOHEXANE		16			1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		5			1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U		1	U		1	U	
TOLUENE		44.7			1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		0.39	J	P	1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		15.5			11.2			1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.53	J	P	1	U		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP04-050515			TB-050515		
SDG: 2068842	LAB_ID	2068842005			2068842001		
FRACTION: OV	SAMP_DATE	5/5/2015			5/5/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	MRC-MW-50A-050515					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U		1	U	
ETHYLBENZENE		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U	
M+P-XYLENES		2	U		2	U	
METHYL ACETATE		2	U		2	U	
METHYL CYCLOHEXANE		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U	
O-XYLENE		1	U		1	U	
STYRENE		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U	
TOLUENE		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		0.38	J	P	1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U	
TRICHLOROETHENE		11.7			1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U	
VINYL CHLORIDE		1	U		1	U	

Appendix B

Results as Reported by the Laboratory

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842001** Date Collected: 5/5/2015 23:15 Matrix: Water

Sample ID: **TB-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 01:21	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:21	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:21	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:21	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 01:21	CJG	A
Bromomethane	0.39J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 01:21	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 01:21	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:21	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:21	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 01:21	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:21	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 01:21	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:21	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:21	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 01:21	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:21	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 01:21	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 01:21	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:21	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:21	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:21	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:21	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:21	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:21	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:21	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:21	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:21	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 01:21	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:21	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:21	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 01:21	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:21	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 01:21	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:21	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842001** Date Collected: 5/5/2015 23:15 Matrix: Water

Sample ID: **TB-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/7/15 01:21	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:21	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:21	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:21	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/7/15 01:21	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:21	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/7/15 01:21	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/7/15 01:21	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:21	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:21	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:21	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:21	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/7/15 01:21	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.9		%	62 - 133	SW846 8260C		5/7/15 01:21	CJG	A
4-Bromofluorobenzene (S)	85.9		%	79 - 114	SW846 8260C		5/7/15 01:21	CJG	A
Dibromofluoromethane (S)	86.8		%	78 - 116	SW846 8260C		5/7/15 01:21	CJG	A
Toluene-d8 (S)	96.8		%	76 - 127	SW846 8260C		5/7/15 01:21	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842002** Date Collected: 5/5/2015 09:20 Matrix: Water

Sample ID: **MRC-MW-68A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Arsenic, Total	0.0043		mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Barium, Total	2.3		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Beryllium, Total	0.20		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Cadmium, Total	0.010		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Chromium, Total	0.0020J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Cobalt, Total	1.5		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Copper, Total	0.16		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Iron, Total	1.1		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 15:21	SRT	A2
Lead, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Manganese, Total	7.2		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:50	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Nickel, Total	4.8		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Selenium, Total	0.016		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Silver, Total	0.00087J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Thallium, Total	0.00049J	J	mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1
Vanadium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:26	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842003** Date Collected: 5/5/2015 10:45 Matrix: Water

Sample ID: **MRC-MW-67A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Arsenic, Total	0.0096		mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Barium, Total	0.66		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Beryllium, Total	0.30		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Cadmium, Total	0.0091		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Chromium, Total	0.0043		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Cobalt, Total	8.6		mg/L	0.056	0.019	SW846 6020A	5/6/15	AAM	5/7/15 05:04	ZMC	A1
Copper, Total	2.0		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Iron, Total	10.1		mg/L	0.13	0.044	SW846 6010C	5/7/15	AAM	5/8/15 15:52	SRT	A2
Lead, Total	0.0089		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Manganese, Total	14.5		mg/L	0.056	0.019	SW846 6020A	5/6/15	AAM	5/7/15 05:04	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:53	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Nickel, Total	14.2		mg/L	0.056	0.019	SW846 6020A	5/6/15	AAM	5/7/15 05:04	ZMC	A1
Selenium, Total	0.032		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Thallium, Total	0.0017		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1
Vanadium, Total	0.0019J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:30	ZMC	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842004** Date Collected: 5/5/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-50A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 01:38	CJG	A
Benzene	0.95J	J	ug/L	1.0	0.23	SW846 8260C		5/7/15 01:38	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:38	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:38	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 01:38	CJG	A
Bromomethane	0.59J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 01:38	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 01:38	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:38	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:38	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 01:38	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:38	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:38	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 01:38	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:38	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:38	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 01:38	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:38	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 01:38	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 01:38	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:38	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:38	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:38	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:38	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:38	CJG	A
cis-1,2-Dichloroethene	0.46J	J	ug/L	1.0	0.32	SW846 8260C		5/7/15 01:38	CJG	A
trans-1,2-Dichloroethene	0.39J	J	ug/L	1.0	0.26	SW846 8260C		5/7/15 01:38	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:38	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:38	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:38	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 01:38	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:38	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:38	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 01:38	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:38	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 01:38	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:38	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842004** Date Collected: 5/5/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-50A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:38	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/7/15 01:38	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/7/15 01:38	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 01:38	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/7/15 01:38	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/7/15 01:38	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/7/15 01:38	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/7/15 01:38	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/7/15 01:38	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/7/15 01:38	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:38	CJG	A
Trichloroethene	11.2		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:38	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 01:38	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/7/15 01:38	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:38	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/7/15 01:38	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260C			5/7/15 01:38	CJG	A
4-Bromofluorobenzene (S)	89		%	79 - 114	SW846 8260C			5/7/15 01:38	CJG	A
Dibromofluoromethane (S)	89.6		%	78 - 116	SW846 8260C			5/7/15 01:38	CJG	A
Toluene-d8 (S)	97.6		%	76 - 127	SW846 8260C			5/7/15 01:38	CJG	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Arsenic, Total	0.0021J	J	mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Barium, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Beryllium, Total	0.0022		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Chromium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Cobalt, Total	0.046		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Copper, Total	0.016		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Iron, Total	1.1		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 15:29	SRT	D2
Lead, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Manganese, Total	0.26		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:54	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Nickel, Total	0.043		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842004** Date Collected: 5/5/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-50A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	0.0084		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Thallium, Total	0.00051J	J	mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
Vanadium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 14:48	MO	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 13:49	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842005** Date Collected: 5/5/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP04-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 01:56	CJG	A
Benzene	0.82J	J	ug/L	1.0	0.23	SW846 8260C		5/7/15 01:56	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:56	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:56	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 01:56	CJG	A
Bromomethane	0.44J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 01:56	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 01:56	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 01:56	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:56	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 01:56	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 01:56	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:56	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 01:56	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:56	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:56	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 01:56	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:56	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 01:56	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 01:56	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 01:56	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 01:56	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 01:56	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 01:56	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:56	CJG	A
cis-1,2-Dichloroethene	0.53J	J	ug/L	1.0	0.32	SW846 8260C		5/7/15 01:56	CJG	A
trans-1,2-Dichloroethene	0.38J	J	ug/L	1.0	0.26	SW846 8260C		5/7/15 01:56	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 01:56	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 01:56	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 01:56	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 01:56	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 01:56	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 01:56	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 01:56	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 01:56	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 01:56	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 01:56	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842005** Date Collected: 5/5/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP04-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:56	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/7/15 01:56	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/7/15 01:56	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 01:56	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/7/15 01:56	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/7/15 01:56	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/7/15 01:56	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/7/15 01:56	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/7/15 01:56	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/7/15 01:56	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:56	CJG	A
Trichloroethene	11.7		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:56	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 01:56	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/7/15 01:56	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 01:56	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/7/15 01:56	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133		SW846 8260C			5/7/15 01:56	CJG	A
4-Bromofluorobenzene (S)	86.5		%	79 - 114		SW846 8260C			5/7/15 01:56	CJG	A
Dibromofluoromethane (S)	91.5		%	78 - 116		SW846 8260C			5/7/15 01:56	CJG	A
Toluene-d8 (S)	97.2		%	76 - 127		SW846 8260C			5/7/15 01:56	CJG	A
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Arsenic, Total	0.0017J	J	mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Barium, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Beryllium, Total	0.0021		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Chromium, Total	0.0013J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Cobalt, Total	0.044		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Copper, Total	0.016		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Iron, Total	1.0		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 15:33	SRT	D2
Lead, Total	0.0015J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Manganese, Total	0.25		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:55	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Nickel, Total	0.040		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842005** Date Collected: 5/5/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP04-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	0.0085		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 05:08	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Thallium, Total	0.00038J	J	mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
Vanadium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:49	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 14:47	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842006** Date Collected: 5/5/2015 14:20 Matrix: Water

Sample ID: **MRC-MW-17A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 02:13	CJG	A
Benzene	163		ug/L	1.0	0.23	SW846 8260C		5/7/15 02:13	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:13	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:13	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 02:13	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/7/15 02:13	CJG	A
2-Butanone	2.6J	J	ug/L	10.0	1.8	SW846 8260C		5/7/15 02:13	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 02:13	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:13	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 02:13	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 02:13	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:13	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 02:13	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:13	CJG	A
Cyclohexane	37.9		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:13	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 02:13	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:13	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 02:13	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 02:13	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:13	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:13	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:13	CJG	A
1,2-Dichloroethane	0.92J	J	ug/L	1.0	0.32	SW846 8260C		5/7/15 02:13	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:13	CJG	A
cis-1,2-Dichloroethene	2.0		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:13	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:13	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 02:13	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:13	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:13	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 02:13	CJG	A
Ethylbenzene	64.7		ug/L	1.0	0.34	SW846 8260C		5/7/15 02:13	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:13	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 02:13	CJG	A
Isopropylbenzene	4.4		ug/L	1.0	0.22	SW846 8260C		5/7/15 02:13	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 02:13	CJG	A
Methyl cyclohexane	16.0		ug/L	1.0	0.30	SW846 8260C		5/7/15 02:13	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842006** Date Collected: 5/5/2015 14:20 Matrix: Water

Sample ID: **MRC-MW-17A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:13	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/7/15 02:13	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/7/15 02:13	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:13	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/7/15 02:13	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/7/15 02:13	CJG	A
Toluene	44.7		ug/L	1.0	0.23	SW846 8260C			5/7/15 02:13	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/7/15 02:13	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/7/15 02:13	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/7/15 02:13	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:13	CJG	A
Trichloroethene	15.5		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:13	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:13	CJG	A
Vinyl Chloride	0.53J	J	ug/L	1.0	0.30	SW846 8260C			5/7/15 02:13	CJG	A
o-Xylene	5.0		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:13	CJG	A
mp-Xylene	35.4		ug/L	2.0	0.52	SW846 8260C			5/7/15 02:13	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	94.8		%	62 - 133		SW846 8260C			5/7/15 02:13	CJG	A
4-Bromofluorobenzene (S)	89		%	79 - 114		SW846 8260C			5/7/15 02:13	CJG	A
Dibromofluoromethane (S)	82		%	78 - 116		SW846 8260C			5/7/15 02:13	CJG	A
Toluene-d8 (S)	101		%	76 - 127		SW846 8260C			5/7/15 02:13	CJG	A
SEMIVOLATILES											
1,4-Dioxane	3.7		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 00:06	DHF	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	85.5		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 00:06	DHF	G
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Barium, Total	0.35		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Beryllium, Total	0.00038J	J	mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Chromium, Total	0.0016J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Cobalt, Total	0.063		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Copper, Total	0.0035J	J	mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Iron, Total	65.9		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 15:36	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842006** Date Collected: 5/5/2015 14:20 Matrix: Water

Sample ID: **MRC-MW-17A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	8.2		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:57	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Nickel, Total	0.077		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:53	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 15:06	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842007** Date Collected: 5/5/2015 10:48 Matrix: Water

Sample ID: **MRC-MW-69A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	12.3		ug/L	10.0	3.1	SW846 8260C		5/7/15 02:30	CJG	A
Benzene	0.34J	J	ug/L	1.0	0.23	SW846 8260C		5/7/15 02:30	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:30	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:30	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 02:30	CJG	A
Bromomethane	0.41J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 02:30	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 02:30	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 02:30	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:30	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 02:30	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 02:30	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:30	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 02:30	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:30	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:30	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 02:30	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:30	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 02:30	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 02:30	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:30	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:30	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:30	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:30	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:30	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:30	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:30	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 02:30	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:30	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:30	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 02:30	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 02:30	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:30	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 02:30	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 02:30	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 02:30	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 02:30	CJG	A

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842007** Date Collected: 5/5/2015 10:48 Matrix: Water

Sample ID: **MRC-MW-69A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:30	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/7/15 02:30	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/7/15 02:30	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:30	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/7/15 02:30	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/7/15 02:30	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/7/15 02:30	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/7/15 02:30	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/7/15 02:30	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/7/15 02:30	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:30	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:30	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:30	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/7/15 02:30	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:30	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/7/15 02:30	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.1		%	62 - 133		SW846 8260C			5/7/15 02:30	CJG	A
4-Bromofluorobenzene (S)	90.9		%	79 - 114		SW846 8260C			5/7/15 02:30	CJG	A
Dibromofluoromethane (S)	86.8		%	78 - 116		SW846 8260C			5/7/15 02:30	CJG	A
Toluene-d8 (S)	99.6		%	76 - 127		SW846 8260C			5/7/15 02:30	CJG	A
SEMIVOLATILES											
1,4-Dioxane	2.0		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 00:31	DHF	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81.5		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 00:31	DHF	G
METALS											
Antimony, Total	0.0024		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Barium, Total	0.22		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Cadmium, Total	0.00039J	J	mg/L	0.0011	0.00037	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Chromium, Total	0.0010J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Cobalt, Total	0.073		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Copper, Total	0.0063		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Iron, Total	5.8		mg/L	0.067	0.022	SW846 6010C	5/7/15	AAM	5/8/15 15:40	SRT	D2
Lead, Total	0.0028		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842007** Date Collected: 5/5/2015 10:48 Matrix: Water

Sample ID: **MRC-MW-69A-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	3.0		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/8/15	MNP	5/8/15 11:58	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Nickel, Total	0.096		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
Vanadium, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	5/6/15	AAM	5/7/15 04:57	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 15:25	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842008** Date Collected: 5/5/2015 12:47 Matrix: Water

Sample ID: **MRC-MW-69B-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/7/15 02:47	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 02:47	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:47	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:47	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/7/15 02:47	CJG	A
Bromomethane	0.46J	J	ug/L	1.0	0.39	SW846 8260C		5/7/15 02:47	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/7/15 02:47	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/7/15 02:47	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:47	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/7/15 02:47	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/7/15 02:47	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:47	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/7/15 02:47	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:47	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:47	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/7/15 02:47	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:47	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/7/15 02:47	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/7/15 02:47	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/7/15 02:47	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/7/15 02:47	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/7/15 02:47	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:47	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:47	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/7/15 02:47	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:47	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/7/15 02:47	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/7/15 02:47	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/7/15 02:47	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/7/15 02:47	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/7/15 02:47	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/7/15 02:47	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/7/15 02:47	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/7/15 02:47	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/7/15 02:47	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/7/15 02:47	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2068842 TMM030|112IC06247

Lab ID: **2068842008** Date Collected: 5/5/2015 12:47 Matrix: Water

Sample ID: **MRC-MW-69B-050515** Date Received: 5/5/2015 23:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:47	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/7/15 02:47	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/7/15 02:47	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:47	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/7/15 02:47	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/7/15 02:47	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/7/15 02:47	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/7/15 02:47	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/7/15 02:47	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/7/15 02:47	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:47	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:47	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/7/15 02:47	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/7/15 02:47	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/7/15 02:47	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/7/15 02:47	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.3		%	62 - 133		SW846 8260C			5/7/15 02:47	CJG	A
4-Bromofluorobenzene (S)	86.2		%	79 - 114		SW846 8260C			5/7/15 02:47	CJG	A
Dibromofluoromethane (S)	87.1		%	78 - 116		SW846 8260C			5/7/15 02:47	CJG	A
Toluene-d8 (S)	95.8		%	76 - 127		SW846 8260C			5/7/15 02:47	CJG	A
SEMIVOLATILES											
1,4-Dioxane	0.32		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 00:56	DHF	F
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	79.5		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 00:56	DHF	F
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 15:44	SUB	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1512733
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **2068842 004** | Sampling Site: NA | Collected: 05/05/2015
Lab ID: 1512733001 | Media: 250 mL Nalgene | Received: 05/07/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 13:49 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**0.23**	0.060	0.20	1	

Sample ID: **2068842 005 (DUP)** | Sampling Site: NA | Collected: 05/05/2015
Lab ID: 1512733002 | Media: 250 mL Nalgene | Received: 05/07/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 14:47 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**0.27**	0.060	0.20	1	

Sample ID: **2068842 006** | Sampling Site: NA | Collected: 05/05/2015
Lab ID: 1512733003 | Media: 250 mL Nalgene | Received: 05/07/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 15:06 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Sample ID: **2068842 007** | Sampling Site: NA | Collected: 05/05/2015
Lab ID: 1512733004 | Media: 250 mL Nalgene | Received: 05/07/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 15:25 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

ANALYTICAL REPORT

Workorder: 34-1512733
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: 2068842 008	Sampling Site: NA	Collected: 05/05/2015
Lab ID: 1512733005	Media: 250 mL Nalgene	Received: 05/07/2015
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850

Preparation: Not Applicable	**Analysis:** EPA 6850, Water	**Instrument ID:** LCMS04
	Batch: ELMS/1566 (HBN: 148781)	**Percent Solid:** NA
	Analyzed: 05/15/2015 15:44	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Comments

Quality Control: EPA 6850 - (HBN: 148781)

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/19/2015 08:05	/S/ Thomas T. McKay 05/20/2015 09:05

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-030

Sample Management

This report contains the results of the analysis of eight (8) ground water samples collected on May 5, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 5, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Five (5) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Six (6) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2173978, carbon disulfide was detected at 0.41J µg/L; 1,4-dichlorobenzene was detected at 0.33J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Three (3) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Ba and Cr had detectible levels in the MB at 0.00273 J mg/L and 0.00083 J mg/L respectively.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury by EPA Method 7470A

Sample handling. Six (6) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

DJM

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE

* 2 0 6 8 8 4 2 *

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech 20251 Century Blvd. Ste. 200 Germantown, MD, 20874	
Phone #: 301-528-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mills

ANALYSIS REQUESTED (Include Method Number and Co...)

PRESERVATIVE: 1 0 7 2

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other ____

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC/MS 1,4 dioxane	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
1	TB-050515		5/5/15	—	Aq	3	X3							
2	MRC-MW-68A-050515			0920		1						X1		
3	MRC-MW-67A-050515			1045		1						X1		
4	MRC-MW-50A-050515			1210		5	X3	X1				X1		
5	MRC-MW-DUP04-050515			—		5	X3	X1				X1		*DUPLICATE
6	MRC-MW-17A-050515			1420		6	X3	X1	X1			X1		
7	MRC-MW-69A-050515			1048		7	X3	X1	X2			X1		
8	MRC-MW-69B-050515			1247		6	X3	X1	X2					

	Y	N	Initials	Cooler Temp:
Custody Seals Present?				°C
(if present) Seals Intact?				Cooler #:
Received on Ice?	✓		LMG	
COC/Lbls Complete	✓			Therm ID: 291
Cont in Good Cond?	✓			
Correct Containers?	✓			Ship Carrier:
Correct Samp Vol?	✓			FedEx UPS
Correct Preservation?	✓			DHL ____
Headspace/Volatiles?				Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS

Metals

* SEE SCOPE FOR FULL METALS LIST

* ALL SAMPLES GO TO MIDDLETOWN, PA LAB

See QAPP ☐

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

____ 1 day ____ 2 day ____ 3 day

____ 4 day ____ 5 day

STANDARD

REQUESTED REPORT DATE

____

F

____ I.

____ II. (

____ III. Summaries

____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

LMG 05106115 0507

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature:	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name: Walt Paton	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name:	Printed Name:	Printed Name: Leah Crabtree
Firm: TT INC	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5-5-15	Date/Time: 5/5/15 1608	Date/Time: 5/5/15	Date/Time: 5/5 2052	Date/Time: 5/5 2315	Date/Time: 05105 2315

Distribution: White - Lab Copy; Yellow - Return to Originator

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ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2068842 TMM030|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2068842001	TB-050515	Water	5/5/2015 23:15	5/5/2015 23:15	Collected by Client
2068842002	MRC-MW-68A-050515	Water	5/5/2015 09:20	5/5/2015 23:15	Collected by Client
2068842003	MRC-MW-67A-050515	Water	5/5/2015 10:45	5/5/2015 23:15	Collected by Client
2068842004	MRC-MW-50A-050515	Water	5/5/2015 12:10	5/5/2015 23:15	Collected by Client
2068842005	MRC-MW-DUP04-050515	Water	5/5/2015 00:00	5/5/2015 23:15	Collected by Client
2068842006	MRC-MW-17A-050515	Water	5/5/2015 14:20	5/5/2015 23:15	Collected by Client
2068842007	MRC-MW-69A-050515	Water	5/5/2015 10:48	5/5/2015 23:15	Collected by Client
2068842008	MRC-MW-69B-050515	Water	5/5/2015 12:47	5/5/2015 23:15	Collected by Client

Field Duplicate Precision

ANALYTE	MRC-MW-DUP04-050515	MRC-MW-50A-050515	RPD	DIFFERENCE
BENZENE	0.82	0.95	14.69	0.13
CIS-1,2-DICHLOROETHENE	0.53	0.46	14.14	0.07
TRANS-1,2-DICHLOROETHE	0.38	0.39	2.60	0.01
TRICHLOROETHENE	11.7	11.2	4.37	0.5

Field Duplicate Precision

ANALYTE	MRC-MW-DUP04-050515	MRC-MW-50A-050515	RPD	DIFFERENCE
ARSENIC	0.0017	0.0021	21.05	0.0004
BARIUM	0.1	0.1	0.00	0
BERYLLIUM	0.0021	0.0022	4.65	0.0001
COBALT	0.044	0.046	4.44	0.002
COPPER	0.016	0.016	0.00	0
IRON	1	1.1	9.52	0.1
LEAD	0.0015	0.0014	6.90	0.0001
MANGANESE	0.25	0.26	3.92	0.01
NICKEL	0.04	0.043	7.23	0.003
SELENIUM	0.0085	0.0084	1.18	0.0001
THALLIUM	0.00038	0.00051	29.21	0.00013
VANADIUM	0.0012	0.0012	0.00	0

Field Duplicate Precision

ANALYTE	MRC-MW-DUP04-050515	MRC-MW-50A-050515	RPD	DIFFERENCE
PERCHLORATE	0.27	0.23	16.00	0.04

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-030

Lab File ID: 15050650.D BFB Injection Date: 5/6/2015

Instrument ID: ms15.i BFB Injection Time: 17:19

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.5(0.7) 1
174	50.0 - 100.0% of mass 95	79.8
175	5.0 - 9.0% of mass 174	5.8 (7.3) 1
176	95.0 - 101.0% of mass 174	75.9 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15050653.D	5/6/2015	18:13
1234	1234	15050654.D	5/6/2015	18:30
1235	1235	15050655.D	5/6/2015	18:48
1236	1236	15050656.D	5/6/2015	19:05
1237	1237	15050657.D	5/6/2015	19:22
1238	1238	15050658.D	5/6/2015	19:39
1239	1239	15050659.D	5/6/2015	19:56
2173978(MB)	2173978	15050663.D	5/6/2015	21:05
2173979(LCS)	2173979	15050664.D	5/6/2015	21:22
TB-050515	2068842001	15050678.D	5/7/2015	01:21
MRC-MW-50A-050515	2068842004	15050679.D	5/7/2015	01:38
MRC-MW-DUP04-050515	2068842005	15050680.D	5/7/2015	01:56
MRC-MW-17A-050515	2068842006	15050681.D	5/7/2015	02:13
MRC-MW-69A-050515	2068842007	15050682.D	5/7/2015	02:30
MRC-MW-69B-050515	2068842008	15050683.D	5/7/2015	02:47

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-030

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	1487496			L	0.000000	55.562489		0.99972
Acrolein	0.03828	0.04603		A		0.038880		8.43794
Acrylonitrile	0.09559	0.10188		A		0.094500		4.84620
Acetonitrile	1974485			L	0.000000	41.937870		0.99803
tert-Amyl Ethylether	8552003	12224		Q	0.000000	0.387160	0.020030	0.99999
tert-Amyl methyl ether	11223846	15157		L	0.000000	1.509960		0.99497
tert-Amyl Alcohol	1261596	1579		Q	0.000000	0.010370	0.000150	0.99996
Benzene	0.92262	1.40154		A		1.219140		12.05685
Benzyl Chloride				Q	0.000000	0.099450	0.024470	0.99967
Bromobenzene	0.95110	0.80106		A		0.886540		6.72760
Bromochloromethane	0.14709	0.20028		A		0.166260		10.79593
Bromodichloromethane	0.40396	0.37793		A		0.367110		5.84639
Bromoform *	0.48813	0.33204		A		0.383280		14.65896
Bromomethane	2050088			L	0.000000	8.103020		0.99728
2-Butanone	0.03653			A		0.033140		7.18044
tert.- Butyl Alcohol	0.01932			A		0.017690		9.06431
tert-Butylbenzene	4642215	3868		Q	0.000000	0.688690	0.009870	0.99995
n-Butylbenzene	4906962			Q	0.000000	0.713050	0.012760	0.99993
sec-Butylbenzene	16063735	17046		Q	-0.267280	4.665220	-0.300370	0.99814
Carbon Disulfide	0.65080	0.74826		A		0.620950		10.96066
Carbon Tetrachloride	0.37573	0.33355		A		0.350230		4.03841
Chloroacetonitrile	739616			Q	0.000000	0.016550	0.000180	0.99988
Chlorobenzene *	2.04001	2.37875		A		2.204260		7.32791
1-Chlorobutane	0.27771	0.31060		A		0.290280		5.40157
Chlorodibromomethane	0.79705	0.61836		A		0.649850		12.05101
Chloroethane	0.16012			A		0.180390		8.30640
2-Chloroethylvinyl ether		71.00000		Q	0.000000	0.002100	0.001130	0.99952
Chloroform **	9028784	49185		L	0.000000	1.824750		0.99969
1-Chlorohexane	6864326	6871		L	0.000000	0.985690		0.99409
Chloromethane *	5425849			L	0.000000	3.037050		0.99954
Chloroprene	0.42001	0.48584		A		0.412460		8.68095
3-Chloro-1-propene	0.24646	0.34853		A		0.273070		13.54156
o-Chlorotoluene	2.60631	2.21453		A		2.534890		12.30947
p-Chlorotoluene	14110231	15830		Q	0.000000	2.912310	-0.091910	0.99956
Cyclohexane	0.42766	0.32991		A		0.393730		8.46357
1,2-Dibromo-3-Chloropropane	828598	1155		Q	0.000000	0.095440	0.005890	0.99996

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-030

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.67905	0.66635		A		0.605060		8.25662
Dibromomethane	0.18178	0.20731		A		0.183750		7.79907
trans-1,4-Dichloro-2-butene	1335426	832		Q	0.000000	0.176960	0.005990	0.99990
1,2-Dichlorobenzene	1.74573	1.62186		A		1.658720		3.01129
1,3-Dichlorobenzene	1.81859	1.57616		A		1.723130		4.78628
1,4-Dichlorobenzene	1.83424	2.01043		A		1.876950		5.32592
Dichlorodifluoromethane	4848952			L	0.000000	3.397030		0.99959
1,1-Dichloroethane *		0.72538		A		0.585610		14.10649
1,2-Dichloroethene, Total	11862157	30886		L	0.000000	2.795550		0.99956
1,2-Dichloroethane	0.36755	0.44716		A		0.397980		9.74642
1,1-Dichloroethene **	5336933	15733		L	0.000000	3.090710		0.99986
cis-1,2-Dichloroethene	0.40488	0.47415		A		0.407690		9.06038
trans-1,2-Dichloroethene	5210063	15512		L	0.000000	3.167850		0.99984
Dichlorofluoromethane	7551750	22300		L	0.000000	2.182690		0.99985
1,1-Dichloro-2-Propanone	479650			Q	0.000000	0.010550	0.000120	0.99993
2,2-Dichloropropane	0.35920	0.34952		A		0.327160		6.77379
1,3-Dichloropropane	1.22249	1.13681		A		1.122740		4.78504
1,2-Dichloropropane **	0.31960	0.35014		A		0.313080		5.71048
1,1-Dichloropropene	0.41431	0.41389		A		0.398760		3.40432
cis-1,3-Dichloropropene	8231315	10015		Q	0.000000	0.897100	0.054120	0.99996
trans-1,3-Dichloropropene	7237259	7110		Q	0.000000	0.812440	0.043970	0.99998
1,3-Dichloropropene, Total	15468574	17125		L	0.000000	0.879600		0.99224
Diisobutylene	10831379	72367		L	0.000000	1.530470		0.99945
Diisopropyl ether	0.79384	0.90312		A		0.820840		4.79358
1,4-Dioxane	1399691			Q	0.000000	0.002800	0.000001	0.99997
Ethyl Acetate	0.23822	0.20713		A		0.216300		6.45785
Ethyl ether	0.15706	0.20420		A		0.164750		12.16900
Ethyl Methacrylate	6663493	5615		Q	0.000000	0.734110	0.042580	0.99993
Ethyl tert-butyl ether	0.75888	0.72254		A		0.685950		7.36936
Ethylbenzene **	1.18268	0.98979		A		1.050100		8.45052
Freon 113	0.20818	0.25052		A		0.235100		12.64637
Heptane	3274130	2764		L	0.000000	5.076210		0.99920
Hexachlorobutadiene	0.43929	0.47725		A		0.441570		10.20987
Hexachloroethane	0.58726	0.53095		A		0.497390		12.48600
Hexane	0.38529	0.42727		A		0.401740		7.57373
2-Hexanone	12919854	13417		L	0.000000	2.554440		0.99946

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-030

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-030

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14912343	16186		Q	0.000000	3.603130	-0.175140	0.99854
1,3,5-Trimethylbenzene	14769233	15047		Q	0.000000	3.492000	-0.162190	0.99888
Vinyl Acetate	1076799	1354		Q	0.000000	0.055210	0.001550	0.99999
Vinyl Chloride **	5003913			L	0.000000	3.328000		0.99895
o-Xylene	9575307	9773		Q	0.000000	1.152210	0.046670	0.99993
mp-Xylene	1.12023	1.00566		A		1.160850		14.29601
4-Bromofluorobenzene		9785		L	0.000000	1.216410		0.99960
Dibromofluoromethane				A		0.307320		8.70339
1,2-Dichloroethane-d4	4970938			L	0.000000	3.315890		0.99971
Toluene-d8				A		2.394470		4.81125

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2173978

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-030

Lab File ID: 15050663.D Lab Sample ID: 2173978

Date Analyzed: 5/6/2015 Time Analyzed: 21:05

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2173979(LCS)	2173979	15050664.D	21:22
TB-050515	2068842001	15050678.D	01:21
MRC-MW-50A-050515	2068842004	15050679.D	01:38
MRC-MW-DUP04-050515	2068842005	15050680.D	01:56
MRC-MW-17A-050515	2068842006	15050681.D	02:13
MRC-MW-69A-050515	2068842007	15050682.D	02:30
MRC-MW-69B-050515	2068842008	15050683.D	02:47

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.33	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2173978(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Matrix (soil/water): WATER Lab Sample ID: 2173978

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050663.D

Level (low/med): Date Received: 5/6/15

% Moisture: not dec. 100.0 Date Analyzed: 5/6/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-030

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2173978(MB)	87.9	86.3	96.5	95.4	0
02	2173979(LCS)	83.8	80.8	87.7	90.4	0
03	TB-050515	85.9	86.8	97.9	96.8	0
04	MRC-MW-50A-050515	89.0	89.6	103	97.6	0
05	MRC-MW-DUP04-050515	86.5	91.5	104	97.2	0
06	MRC-MW-17A-050515	89.0	82.0	94.8	101	0
07	MRC-MW-69A-050515	90.9	86.8	99.1	99.6	0
08	MRC-MW-69B-050515	86.2	87.1	99.3	95.8	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		103	103	(40-151)
Benzene	20.0		20.1	100	(80-124)
Bromochloromethane	20.0		19.3	96.6	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.6	87.8	(70-123)
Bromomethane	20.0		25.7	129	(45-148)
2-Butanone	100		99.4	99.4	(50-152)
Carbon Disulfide	20.0		16.6	83.1	(57-131)
Carbon Tetrachloride	20.0		19.1	95.7	(62-132)
Chlorobenzene	20.0		19.0	94.9	(85-117)
Chlorodibromomethane	20.0		18.0	89.9	(77-122)
Chloroethane	20.0		19.3	96.5	(51-142)
Chloroform	20.0		21.1	105	(78-122)
Chloromethane	20.0		26.2	131	(38-156)
Cyclohexane	20.0		20.3	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.0	95.2	(59-133)
1,2-Dibromoethane	20.0		18.4	91.8	(80-124)
1,2-Dichlorobenzene	20.0		18.8	94.1	(82-118)
1,3-Dichlorobenzene	20.0		19.8	99	(81-118)
1,4-Dichlorobenzene	20.0		18.5	92.6	(81-116)
Dichlorodifluoromethane	20.0		26.1	131	(17-166)
1,1-Dichloroethane	20.0		18.3	91.7	(78-124)
1,2-Dichloroethane	20.0		18.8	94	(70-133)
1,1-Dichloroethene	20.0		19.9	99.4	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	93.9	(78-125)
trans-1,2-Dichloroethen	20.0		21.2	106	(71-122)
1,2-Dichloropropane	20.0		18.8	94.2	(81-127)
cis-1,3-Dichloropropene	20.0		18.3	91.5	(81-121)
trans-1,3-Dichloroprope	20.0		19.6	98	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Laboratory Control Spike - Sample No: 2173979

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		495	98.9	(1-280)
Ethylbenzene	20.0		19.8	99	(80-124)
Freon 113	20.0		18.2	90.9	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		19.5	97.4	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90	(69-115)
4-Methyl-2-Pentanone(MI	100		81.6	81.6	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		17.2	86.2	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.7	88.5	(74-135)
Tetrachloroethene	20.0		18.1	90.7	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.1	85.6	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84	(67-123)
1,1,1-Trichloroethane	20.0		18.5	92.4	(66-130)
1,1,2-Trichloroethane	20.0		18.0	89.8	(82-126)
Trichloroethene	20.0		19.3	96.4	(77-124)
Trichlorofluoromethane	20.0		19.4	97	(38-123)
Vinyl Chloride	20.0		23.4	117	(27-138)
o-Xylene	20.0		18.4	92.1	(79-124)
mp-Xylene	40.0		43.8	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Lab File ID: 15050657.D Date Analyzed: 5/6/2015

Instrument ID: ms15.i Time Analyzed: 19:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	976495	5.913	866637	7.686	2355608	3.910
UPPER LIMIT	1952990	6.413	1733274	8.186	4711216	4.410
LOWER LIMIT	488248	5.413	433319	7.186	1177804	3.410
SAMPLE NO.						
2173978(MB)	752321	5.912	603856	7.686	1965746	3.910
2173979(LCS)	926739	5.913	855915	7.686	2195905	3.910
TB-050515	677520	5.913	534187	7.686	1875231	3.910
MRC-MW-50A-050515	665267	5.913	522826	7.686	1818365	3.910
MRC-MW-DUP04-0505	644045	5.913	511117	7.686	1724725	3.910
MRC-MW-17A-050515	820624	5.912	682749	7.686	2011400	3.910
MRC-MW-69A-050515	682845	5.913	531951	7.686	1878568	3.910
MRC-MW-69B-050515	669889	5.913	520172	7.686	1827846	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2174900

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Matrix: (soil/water) WATER Lab Sample ID: 2174900

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050802

Level: (low/med) LOW Date Received: 05/08/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/08/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/08/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2174900	83								0
02	2174901LCSLO	81								0
03	MRC-MW-17A-0	86								0
04	MRC-MW-69A-0	82								0
05	MRC-MW-69B-0	79								0
06										
07										
08										
09										
10										
11										
12										
13										
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27										
28										
29										
30										

QC LIMITS

S1 = 1,4-Dioxane-d8 (70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Matrix Spike - Sample No.: 2174901LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0672244	96	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2174900

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Lab File ID: 12050802 Lab Sample ID: 2174900

Instrument ID: MS12 Date Extracted: 05/08/15

Matrix: (soil/water) WATER Date Analyzed: 05/08/15

Level:(low/med) LOW Time Analyzed: 2018

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2174901LCSLO	2174901	12050803	05/08/15
02	MRC-MW-17A-0	2068842006	12050811	05/09/15
03	MRC-MW-69A-0	2068842007	12050812	05/09/15
04	MRC-MW-69B-0	2068842008	12050813	05/09/15
05				
06				
07				
08				
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11				
12				
13				
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30				

COMMENTS:

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

Instrument ID: MS12 Calibration Date: 05/08/15 Time: 1950

Lab File ID: 12050801 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.42e-003	3.5e-003	1.0093754	0.00001	26.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6260601	0.6260601	0.00001	-12.07	30.00	AVRG

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/08/15

Lab File ID (Standard): 12050801 Time Analyzed: 1950

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	49171	6.36				
UPPER LIMIT	63922	6.86				
LOWER LIMIT	34420	5.86				
SAMPLE NO.						
01 2174900	50398	6.36				
02 2174901LCSLO	52006	6.36				
03 MRC-MW-17A-0	52650	6.36				
04 MRC-MW-69A-0	51327	6.35				
05 MRC-MW-69B-0	52276	6.36				
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
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17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/08/15	1950	8.36			
02	2174900	2174900	05/08/15	2018	8.36			
03	2174901LCSLO	2174901	05/08/15	2043	8.36			
04	MRC-MW-17A-0	2068842006	05/09/15	0006	8.36			
05	MRC-MW-69A-0	2068842007	05/09/15	0031	8.36			
06	MRC-MW-69B-0	2068842008	05/09/15	0056	8.36			
07								
08								
09								
10								
11								
12								
13								
14								
15								
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19								
20								
21								
22								
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27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM030

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1000	1000	08/13/14	1534		
02	1234	1234	08/13/14	1643	8.38	
03	1235	1235	08/13/14	1713	8.36	
04	1236	1236	08/13/14	1742	8.38	
05	1237	1237	08/13/14	1814	8.38	
06	1238	1238	08/13/14	1845	8.38	
07	1239	1239	08/13/14	1918	8.38	
08	1240	1240	08/13/14	1950	8.38	
09	1241	1241	08/13/14	2018	8.36	
10	1242	1242	08/13/14	2046	8.38	
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38	
12						
13						
14						
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19						
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21						
22						
23						
24						
25						
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32						

QC LIMITS

S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

6020 3015
- 13 -
SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-030
Contract: TMM030|112IC06247 **Lab Code:** CAS
Method: MS
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71284						
2173828	MB for HBN 71284 [MDIG/50704	MB	QC-WAT	5/6/15	45.0	50.0	
2173829	LCS for HBN 71284 [MDIG/50704	LCS	QC-WAT	5/6/15	45.0	50.0	
2068842002	MRC-MW-68A-050515	SAM	WATER	5/6/15	45.0	50.0	
2068842003	MRC-MW-67A-050515	SAM	WATER	5/6/15	45.0	50.0	
2068842005	MRC-MW-DUP04-050515	SAM	WATER	5/6/15	45.0	50.0	
2068842006	MRC-MW-17A-050515	SAM	WATER	5/6/15	45.0	50.0	
2068842007	MRC-MW-69A-050515	SAM	WATER	5/6/15	45.0	50.0	
2068842004	MRC-MW-50A-050515	SAM	WATER	5/6/15	45.0	50.0	

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2250																									
BLK	1.00	2254			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2258			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2302			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2305			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2309			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2313			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2316			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	2320			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	2324			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	2328																										
ZZZZZZ	1.00	2332																										
ZZZZZZ	1.00	2335																										
ICS-A2	1.00	2339			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB2	1.00	2343			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	2347																										
ZZZZZZ	1.00	2350																										
ZZZZZZ	5.00	2354																										
ZZZZZZ	5.00	2358																										
ZZZZZZ	5.00	0002																										
ZZZZZZ	5.00	0005																										
ZZZZZZ	5.00	0009																										
ZZZZZZ	5.00	0013																										
ZZZZZZ	5.00	0017																										
ZZZZZZ	5.00	0020																										
ZZZZZZ	5.00	0024																										
ZZZZZZ	5.00	0028																										
ZZZZZZ	1.00	0032																										
ZZZZZZ	1.00	0036																										
ZZZZZZ	1.00	0039																										
ZZZZZZ	5.00	0043																										
ZZZZZZ	5.00	0047																										
ZZZZZZ	5.00	0050																										
ZZZZZZ	5.00	0054																										
ZZZZZZ	5.00	0058																										
ZZZZZZ	25.00	0102																										

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0106																								
ZZZZZZ	5.00	0109																								
ZZZZZZ	5.00	0113																								
ZZZZZZ	5.00	0117																								
ZZZZZZ	1.00	0121																								
ZZZZZZ	1.00	0124																								
ZZZZZZ	1.00	0128																								
ZZZZZZ	5.00	0132																								
ZZZZZZ	5.00	0136																								
ZZZZZZ	5.00	0140																								
ZZZZZZ	5.00	0143																								
ZZZZZZ	5.00	0147																								
ZZZZZZ	5.00	0151																								
ZZZZZZ	5.00	0155																								
ZZZZZZ	5.00	0159																								
ZZZZZZ	5.00	0202																								
ZZZZZZ	5.00	0206																								
ZZZZZZ	1.00	0210																								
ZZZZZZ	1.00	0214																								
ZZZZZZ	1.00	0217																								
ZZZZZZ	25.00	0221																								
ZZZZZZ	5.00	0225																								
ZZZZZZ	5.00	0229																								
ZZZZZZ	5.00	0233																								
ZZZZZZ	5.00	0237																								
ZZZZZZ	5.00	0240																								
ZZZZZZ	5.00	0244																								
ZZZZZZ	5.00	0248																								
ZZZZZZ	5.00	0252																								
ZZZZZZ	5.00	0256																								
ZZZZZZ	1.00	0259																								
ZZZZZZ	1.00	0303																								
ZZZZZZ	1.00	0307																								
ZZZZZZ	5.00	0311																								
ZZZZZZ	5.00	0314																								
ZZZZZZ	5.00	0318																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	0322																									
ZZZZZZ	5.00	0326																									
ZZZZZZ	5.00	0330																									
ZZZZZZ	5.00	0334																									
ZZZZZZ	5.00	0337																									
ZZZZZZ	5.00	0341																									
ZZZZZZ	5.00	0345																									
CCV5	1.00	0349			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	0353			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0400																									
ZZZZZZ	5.00	0404																									
2173828	1.00	0408			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2173829	1.00	0412			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0415																									
ZZZZZZ	1.00	0419																									
ZZZZZZ	1.00	0423																									
2068842002	1.00	0426			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068842003	1.00	0430			X	X	X	X	X		X		X		X						X	X		X	X			*
ZZZZZZ	1.00	0434																									
CCV6	1.00	0438			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	0442			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0445			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068842005	1.00	0449			X	X	X	X	X		X	X	X		X		X		X			X		X	X			*
2068842006	1.00	0453			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2068842007	1.00	0457			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	10.00	0501																									
2068842003	10.00	0504										X					X		X								
2068842005	1.00	0508																			X						
ZZZZZZ	1.00	0512																									
ZZZZZZ	1.00	0515																									
ZZZZZZ	1.00	0519																									
ZZZZZZ	1.00	0523																									
CCV7	1.00	0527			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB7	1.00	0530			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0534			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050615B 225

Start Date: 5/6/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0538																								
ZZZZZZ	1.00	0541																								
ZZZZZZ	5.00	0545																								
ZZZZZZ	1.00	0549																								
ZZZZZZ	1.00	0553																								
ZZZZZZ	1.00	0556																								
ZZZZZZ	1.00	0600																								
ZZZZZZ	1.00	0604																								
ZZZZZZ	1.00	0608																								
ZZZZZZ	1.00	0611																								
ZZZZZZ	1.00	0615																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050715C 115

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1151																										
BLK	1.00	1155			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	1158			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	1202			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	1206			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	1209			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	1213			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	1217			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	1221			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	1224			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	1228			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	1232			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1242																										
ZZZZZZ	1.00	1245																										
ZZZZZZ	5.00	1249																										
ZZZZZZ	5.00	1253																										
ZZZZZZ	5.00	1257																										
ZZZZZZ	25.00	1300																										
ZZZZZZ	5.00	1304																										
ZZZZZZ	5.00	1308																										
ZZZZZZ	5.00	1312																										
ZZZZZZ	5.00	1315																										
ZZZZZZ	5.00	1319																										
ZZZZZZ	5.00	1323																										
ZZZZZZ	1.00	1327																										
ZZZZZZ	1.00	1331																										
ZZZZZZ	1.00	1334																										
ZZZZZZ	5.00	1338																										
ZZZZZZ	5.00	1342																										
ZZZZZZ	5.00	1346																										
ZZZZZZ	5.00	1349																										
ZZZZZZ	50.00	1406																										
ZZZZZZ	1.00	1411																										
ZZZZZZ	1.00	1415																										
CCV2	1.00	1418			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	1422			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A050715C 115

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
LLCCV	1.00	1426			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1432																										
ZZZZZZ	1.00	1436																										
2068842004	1.00	1448			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1503																										
ZZZZZZ	5.00	1507																										
CCV3	1.00	1510			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	1514			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1518			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	22:50																									
BLK	1.00	22:54					X																				
STANDARD 1	1.00	22:58					X																				
STANDARD 2	1.00	23:02					X																				
STANDARD 3	1.00	23:05					X																				
STANDARD 4	1.00	23:09					X																				
STANDARD 5	1.00	23:13					X																				
ICV	1.00	23:16					X																				
ICB1	1.00	23:20					X																				
LLICV	1.00	23:24					X																				
ZZZZZZ	1.00	23:28																									
ZZZZZZ	1.00	23:32																									
ZZZZZZ	1.00	23:35																									
ICS-A2	1.00	23:39					X																				
ICS-AB2	1.00	23:43					X																				
ZZZZZZ	1.00	23:47																									
ZZZZZZ	1.00	23:50																									
ZZZZZZ	5.00	23:54																									
ZZZZZZ	5.00	23:58																									
ZZZZZZ	5.00	00:02																									
ZZZZZZ	5.00	00:05																									
ZZZZZZ	5.00	00:09																									
ZZZZZZ	5.00	00:13																									
ZZZZZZ	5.00	00:17																									
ZZZZZZ	5.00	00:20																									
ZZZZZZ	5.00	00:24																									
ZZZZZZ	5.00	00:28																									
ZZZZZZ	1.00	00:32																									
ZZZZZZ	1.00	00:36																									
ZZZZZZ	1.00	00:39																									
ZZZZZZ	5.00	00:43																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	5.00	00:47																										
ZZZZZZ	5.00	00:50																										
ZZZZZZ	5.00	00:54																										
ZZZZZZ	5.00	00:58																										
ZZZZZZ	25.00	01:02																										
ZZZZZZ	5.00	01:06																										
ZZZZZZ	5.00	01:09																										
ZZZZZZ	5.00	01:13																										
ZZZZZZ	5.00	01:17																										
ZZZZZZ	1.00	01:21																										
ZZZZZZ	1.00	01:24																										
ZZZZZZ	1.00	01:28																										
ZZZZZZ	5.00	01:32																										
ZZZZZZ	5.00	01:36																										
ZZZZZZ	5.00	01:40																										
ZZZZZZ	5.00	01:43																										
ZZZZZZ	5.00	01:47																										
ZZZZZZ	5.00	01:51																										
ZZZZZZ	5.00	01:55																										
ZZZZZZ	5.00	01:59																										
ZZZZZZ	5.00	02:02																										
ZZZZZZ	5.00	02:06																										
ZZZZZZ	1.00	02:10																										
ZZZZZZ	1.00	02:14																										
ZZZZZZ	1.00	02:17																										
ZZZZZZ	25.00	02:21																										
ZZZZZZ	5.00	02:25																										
ZZZZZZ	5.00	02:29																										
ZZZZZZ	5.00	02:33																										
ZZZZZZ	5.00	02:37																										
ZZZZZZ	5.00	02:40																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	5.00	02:44																										
ZZZZZZ	5.00	02:48																										
ZZZZZZ	5.00	02:52																										
ZZZZZZ	5.00	02:56																										
ZZZZZZ	1.00	02:59																										
ZZZZZZ	1.00	03:03																										
ZZZZZZ	1.00	03:07																										
ZZZZZZ	5.00	03:11																										
ZZZZZZ	5.00	03:14																										
ZZZZZZ	5.00	03:18																										
ZZZZZZ	5.00	03:22																										
ZZZZZZ	5.00	03:26																										
ZZZZZZ	5.00	03:30																										
ZZZZZZ	5.00	03:34																										
ZZZZZZ	5.00	03:37																										
ZZZZZZ	5.00	03:41																										
ZZZZZZ	5.00	03:45																										
CCV5	1.00	03:49					X																					
CCB5	1.00	03:53					X																					
LLCCV	1.00	03:56					X																					
ZZZZZZ	5.00	04:00																										
ZZZZZZ	5.00	04:04																										
2173828	1.00	04:08					X																					
2173829	1.00	04:12					X																					
ZZZZZZ	1.00	04:15																										
ZZZZZZ	1.00	04:19																										
ZZZZZZ	1.00	04:23																										
2068842002	1.00	04:26					X																					
2068842003	1.00	04:30					X																					
ZZZZZZ	1.00	04:34																										
CCV6	1.00	04:38					X																					

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050615B 225

Start Date: 5/6/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR									
CCB6	1.00	04:42					X																							
LLCCV	1.00	04:45					X																							
2068842005	1.00	04:49					X																							
2068842006	1.00	04:53					X																							
2068842007	1.00	04:57					X																							
ZZZZZZ	10.00	05:01																												
2068842003	10.00	05:04																												
2068842005	1.00	05:08																												
ZZZZZZ	1.00	05:12																												
ZZZZZZ	1.00	05:15																												
ZZZZZZ	1.00	05:19																												
ZZZZZZ	1.00	05:23																												
CCV7	1.00	05:27					X																							
CCB7	1.00	05:30					X																							
LLCCV	1.00	05:34					X																							
ZZZZZZ	1.00	05:38																												
ZZZZZZ	1.00	05:41																												
ZZZZZZ	5.00	05:45																												
ZZZZZZ	1.00	05:49																												
ZZZZZZ	1.00	05:53																												
ZZZZZZ	1.00	05:56																												
ZZZZZZ	1.00	06:00																												
ZZZZZZ	1.00	06:04																												
ZZZZZZ	1.00	06:08																												
ZZZZZZ	1.00	06:11																												
ZZZZZZ	1.00	06:15																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050715C 115

Start Date: 5/7/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	11:51																									
BLK	1.00	11:55					X																				
STANDARD 1	1.00	11:58					X																				
STANDARD 2	1.00	12:02					X																				
STANDARD 3	1.00	12:06					X																				
STANDARD 4	1.00	12:09					X																				
STANDARD 5	1.00	12:13					X																				
ICV	1.00	12:17					X																				
ICB1	1.00	12:21					X																				
LLICV	1.00	12:24					X																				
ICS-A1	1.00	12:28					X																				
ICS-AB1	1.00	12:32					X																				
ZZZZZZ	1.00	12:42																									
ZZZZZZ	1.00	12:45																									
ZZZZZZ	5.00	12:49																									
ZZZZZZ	5.00	12:53																									
ZZZZZZ	5.00	12:57																									
ZZZZZZ	25.00	13:00																									
ZZZZZZ	5.00	13:04																									
ZZZZZZ	5.00	13:08																									
ZZZZZZ	5.00	13:12																									
ZZZZZZ	5.00	13:15																									
ZZZZZZ	5.00	13:19																									
ZZZZZZ	5.00	13:23																									
ZZZZZZ	1.00	13:27																									
ZZZZZZ	1.00	13:31																									
ZZZZZZ	1.00	13:34																									
ZZZZZZ	5.00	13:38																									
ZZZZZZ	5.00	13:42																									
ZZZZZZ	5.00	13:46																									
ZZZZZZ	5.00	13:49																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM030|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-030

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A050715C 115

Start Date: 5/7/2015 **End Date:** 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	50.00	14:06																										
ZZZZZZ	1.00	14:11																										
ZZZZZZ	1.00	14:15																										
CCV2	1.00	14:18					X																					
CCB2	1.00	14:22					X																					
LLCCV	1.00	14:26					X																					
ZZZZZZ	1.00	14:32																										
ZZZZZZ	1.00	14:36																										
2068842004	1.00	14:48					X																					
ZZZZZZ	1.00	14:56																										
ZZZZZZ	1.00	14:59																										
ZZZZZZ	1.00	15:03																										
ZZZZZZ	5.00	15:07																										
CCV3	1.00	15:10					X																					
CCB3	1.00	15:14					X																					
LLCCV	1.00	15:18					X																					

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1023	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Arsenic	0.0981	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Barium	0.1013	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Beryllium	0.1012	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Cadmium	0.1033	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Chromium	0.1017	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Copper	0.1011	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Lead	0.1030	0.1000	103		90 - 110	M	5/6/2015	23:16	A050615B 2
	Manganese	0.1023	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
	Molybdenum	0.1052	0.1000	105		90 - 110	M	5/6/2015	23:16	A050615B 2
	Nickel	0.1006	0.1000	101		90 - 110	M	5/6/2015	23:16	A050615B 2
	Selenium	0.0979	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Silver	0.0978	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Thallium	0.0980	0.1000	98		90 - 110	M	5/6/2015	23:16	A050615B 2
	Vanadium	0.1022	0.1000	102		90 - 110	M	5/6/2015	23:16	A050615B 2
LLICV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/6/2015	23:24	A050615B 2
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/6/2015	23:24	A050615B 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/6/2015	23:24	A050615B 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/6/2015	23:24	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Chromium	0.0021	0.0020	105		70 - 130	M	5/6/2015	23:24	A050615B 2
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/6/2015	23:24	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/6/2015	23:24	A050615B 2
	Selenium	0.0046	0.0050	92		70 - 130	M	5/6/2015	23:24	A050615B 2
	Silver	0.0022	0.0020	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/6/2015	23:24	A050615B 2
	Vanadium	0.0024	0.0020	120		70 - 130	M	5/6/2015	23:24	A050615B 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1014	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Arsenic	0.0981	0.1000	98		90 - 110	M	5/7/2015	03:49	A050615B 2
	Barium	0.1019	0.1000	102		90 - 110	M	5/7/2015	03:49	A050615B 2
	Beryllium	0.0949	0.1000	95		90 - 110	M	5/7/2015	03:49	A050615B 2
	Cadmium	0.1034	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Chromium	0.1006	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Cobalt	0.1005	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
	Copper	0.1009	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Lead	0.1031	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Manganese	0.1006	0.1000	101		90 - 110	M	5/7/2015	03:49	A050615B 2
	Molybdenum	0.1032	0.1000	103		90 - 110	M	5/7/2015	03:49	A050615B 2
	Nickel	0.1001	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
	Selenium	0.0954	0.1000	95		90 - 110	M	5/7/2015	03:49	A050615B 2
	Silver	0.0961	0.1000	96		90 - 110	M	5/7/2015	03:49	A050615B 2
	Thallium	0.0966	0.1000	97		90 - 110	M	5/7/2015	03:49	A050615B 2
	Vanadium	0.0997	0.1000	100		90 - 110	M	5/7/2015	03:49	A050615B 2
LLCCV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/7/2015	03:56	A050615B 2
	Arsenic	0.0033	0.0030	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Barium	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Beryllium	0.0009	0.0010	90		70 - 130	M	5/7/2015	03:56	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Chromium	0.0018	0.0020	90		70 - 130	M	5/7/2015	03:56	A050615B 2
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Manganese	0.0054	0.0050	108		70 - 130	M	5/7/2015	03:56	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/7/2015	03:56	A050615B 2
	Selenium	0.0053	0.0050	106		70 - 130	M	5/7/2015	03:56	A050615B 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/7/2015	03:56	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	03:56	A050615B 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/7/2015	03:56	A050615B 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1018	0.1000	102		90 - 110	M	5/7/2015	04:38	A050615B 2
	Arsenic	0.1005	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Barium	0.1011	0.1000	101		90 - 110	M	5/7/2015	04:38	A050615B 2
	Beryllium	0.0951	0.1000	95		90 - 110	M	5/7/2015	04:38	A050615B 2
	Cadmium	0.1030	0.1000	103		90 - 110	M	5/7/2015	04:38	A050615B 2
	Chromium	0.1003	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Cobalt	0.0998	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Copper	0.0996	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Lead	0.1024	0.1000	102		90 - 110	M	5/7/2015	04:38	A050615B 2
	Manganese	0.1005	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Molybdenum	0.1037	0.1000	104		90 - 110	M	5/7/2015	04:38	A050615B 2
	Nickel	0.0984	0.1000	98		90 - 110	M	5/7/2015	04:38	A050615B 2
	Selenium	0.0998	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
	Silver	0.0960	0.1000	96		90 - 110	M	5/7/2015	04:38	A050615B 2
	Thallium	0.0964	0.1000	96		90 - 110	M	5/7/2015	04:38	A050615B 2
	Vanadium	0.0997	0.1000	100		90 - 110	M	5/7/2015	04:38	A050615B 2
LLCCV										
	Antimony	0.0023	0.0020	115		70 - 130	M	5/7/2015	04:45	A050615B 2
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Barium	0.0052	0.0050	104		70 - 130	M	5/7/2015	04:45	A050615B 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Chromium	0.0019	0.0020	95		70 - 130	M	5/7/2015	04:45	A050615B 2
	Cobalt	0.0053	0.0050	106		70 - 130	M	5/7/2015	04:45	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	04:45	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Manganese	0.0055	0.0050	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Nickel	0.0050	0.0050	100		70 - 130	M	5/7/2015	04:45	A050615B 2
	Selenium	0.0053	0.0050	106		70 - 130	M	5/7/2015	04:45	A050615B 2
	Silver	0.0022	0.0020	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	04:45	A050615B 2
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/7/2015	04:45	A050615B 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1011	0.1000	101		90 - 110	M	5/7/2015	05:27	A050615B 2
	Arsenic	0.0994	0.1000	99		90 - 110	M	5/7/2015	05:27	A050615B 2
	Barium	0.1011	0.1000	101		90 - 110	M	5/7/2015	05:27	A050615B 2
	Beryllium	0.0935	0.1000	94		90 - 110	M	5/7/2015	05:27	A050615B 2
	Cadmium	0.1030	0.1000	103		90 - 110	M	5/7/2015	05:27	A050615B 2
	Chromium	0.0997	0.1000	100		90 - 110	M	5/7/2015	05:27	A050615B 2
	Cobalt	0.0999	0.1000	100		90 - 110	M	5/7/2015	05:27	A050615B 2
	Copper	0.0996	0.1000	100		90 - 110	M	5/7/2015	05:27	A050615B 2
	Lead	0.1028	0.1000	103		90 - 110	M	5/7/2015	05:27	A050615B 2
	Manganese	0.1003	0.1000	100		90 - 110	M	5/7/2015	05:27	A050615B 2
	Molybdenum	0.1035	0.1000	104		90 - 110	M	5/7/2015	05:27	A050615B 2
	Nickel	0.0984	0.1000	98		90 - 110	M	5/7/2015	05:27	A050615B 2
	Selenium	0.0991	0.1000	99		90 - 110	M	5/7/2015	05:27	A050615B 2
	Silver	0.0958	0.1000	96		90 - 110	M	5/7/2015	05:27	A050615B 2
	Thallium	0.0977	0.1000	98		90 - 110	M	5/7/2015	05:27	A050615B 2
	Vanadium	0.0992	0.1000	99		90 - 110	M	5/7/2015	05:27	A050615B 2
LLCCV										
	Antimony	0.0022	0.0020	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/7/2015	05:34	A050615B 2
	Barium	0.0051	0.0050	102		70 - 130	M	5/7/2015	05:34	A050615B 2
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	05:34	A050615B 2
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Chromium	0.0019	0.0020	95		70 - 130	M	5/7/2015	05:34	A050615B 2
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/7/2015	05:34	A050615B 2
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	05:34	A050615B 2
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Manganese	0.0055	0.0050	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Molybdenum	0.0022	0.0020	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Nickel	0.0051	0.0050	102		70 - 130	M	5/7/2015	05:34	A050615B 2
	Selenium	0.0054	0.0050	108		70 - 130	M	5/7/2015	05:34	A050615B 2
	Silver	0.0021	0.0020	105		70 - 130	M	5/7/2015	05:34	A050615B 2
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	05:34	A050615B 2
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/7/2015	05:34	A050615B 2

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1024	0.1000	102		90 - 110	M	5/7/2015	12:17	A050715C 1
	Arsenic	0.1044	0.1000	104		90 - 110	M	5/7/2015	12:17	A050715C 1
	Barium	0.1015	0.1000	102		90 - 110	M	5/7/2015	12:17	A050715C 1
	Beryllium	0.1025	0.1000	102		90 - 110	M	5/7/2015	12:17	A050715C 1
	Cadmium	0.1041	0.1000	104		90 - 110	M	5/7/2015	12:17	A050715C 1
	Chromium	0.1032	0.1000	103		90 - 110	M	5/7/2015	12:17	A050715C 1
	Cobalt	0.1028	0.1000	103		90 - 110	M	5/7/2015	12:17	A050715C 1
	Copper	0.1025	0.1000	102		90 - 110	M	5/7/2015	12:17	A050715C 1
	Lead	0.1041	0.1000	104		90 - 110	M	5/7/2015	12:17	A050715C 1
	Manganese	0.1031	0.1000	103		90 - 110	M	5/7/2015	12:17	A050715C 1
	Molybdenum	0.1049	0.1000	105		90 - 110	M	5/7/2015	12:17	A050715C 1
	Nickel	0.1012	0.1000	101		90 - 110	M	5/7/2015	12:17	A050715C 1
	Selenium	0.1011	0.1000	101		90 - 110	M	5/7/2015	12:17	A050715C 1
	Silver	0.0965	0.1000	96		90 - 110	M	5/7/2015	12:17	A050715C 1
	Thallium	0.0992	0.1000	99		90 - 110	M	5/7/2015	12:17	A050715C 1
	Vanadium	0.1029	0.1000	103		90 - 110	M	5/7/2015	12:17	A050715C 1
LLICV										
	Antimony	0.0024	0.0020	120		70 - 130	M	5/7/2015	12:24	A050715C 1
	Arsenic	0.0035	0.0030	117		70 - 130	M	5/7/2015	12:24	A050715C 1
	Barium	0.0052	0.0050	104		70 - 130	M	5/7/2015	12:24	A050715C 1
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	12:24	A050715C 1
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	12:24	A050715C 1
	Chromium	0.0020	0.0020	100		70 - 130	M	5/7/2015	12:24	A050715C 1
	Cobalt	0.0053	0.0050	106		70 - 130	M	5/7/2015	12:24	A050715C 1
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	12:24	A050715C 1
	Lead	0.0023	0.0020	115		70 - 130	M	5/7/2015	12:24	A050715C 1
	Manganese	0.0054	0.0050	108		70 - 130	M	5/7/2015	12:24	A050715C 1
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/7/2015	12:24	A050715C 1
	Nickel	0.0052	0.0050	104		70 - 130	M	5/7/2015	12:24	A050715C 1
	Selenium	0.0059	0.0050	118		70 - 130	M	5/7/2015	12:24	A050715C 1
	Silver	0.0022	0.0020	110		70 - 130	M	5/7/2015	12:24	A050715C 1
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	12:24	A050715C 1
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/7/2015	12:24	A050715C 1

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1030	0.1000	103		90 - 110	M	5/7/2015	14:18	A050715C 1
	Arsenic	0.1021	0.1000	102		90 - 110	M	5/7/2015	14:18	A050715C 1
	Barium	0.0994	0.1000	99		90 - 110	M	5/7/2015	14:18	A050715C 1
	Beryllium	0.0987	0.1000	99		90 - 110	M	5/7/2015	14:18	A050715C 1
	Cadmium	0.1039	0.1000	104		90 - 110	M	5/7/2015	14:18	A050715C 1
	Chromium	0.1023	0.1000	102		90 - 110	M	5/7/2015	14:18	A050715C 1
	Cobalt	0.1022	0.1000	102		90 - 110	M	5/7/2015	14:18	A050715C 1
	Copper	0.1025	0.1000	102		90 - 110	M	5/7/2015	14:18	A050715C 1
	Lead	0.1040	0.1000	104		90 - 110	M	5/7/2015	14:18	A050715C 1
	Manganese	0.1047	0.1000	105		90 - 110	M	5/7/2015	14:18	A050715C 1
	Molybdenum	0.1031	0.1000	103		90 - 110	M	5/7/2015	14:18	A050715C 1
	Nickel	0.1000	0.1000	100		90 - 110	M	5/7/2015	14:18	A050715C 1
	Selenium	0.1010	0.1000	101		90 - 110	M	5/7/2015	14:18	A050715C 1
	Silver	0.0958	0.1000	96		90 - 110	M	5/7/2015	14:18	A050715C 1
	Thallium	0.0997	0.1000	100		90 - 110	M	5/7/2015	14:18	A050715C 1
	Vanadium	0.1024	0.1000	102		90 - 110	M	5/7/2015	14:18	A050715C 1
LLCCV										
	Antimony	0.0024	0.0020	120		70 - 130	M	5/7/2015	14:26	A050715C 1
	Arsenic	0.0036	0.0030	120		70 - 130	M	5/7/2015	14:26	A050715C 1
	Barium	0.0049	0.0050	98		70 - 130	M	5/7/2015	14:26	A050715C 1
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	14:26	A050715C 1
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	14:26	A050715C 1
	Chromium	0.0020	0.0020	100		70 - 130	M	5/7/2015	14:26	A050715C 1
	Cobalt	0.0055	0.0050	110		70 - 130	M	5/7/2015	14:26	A050715C 1
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	14:26	A050715C 1
	Lead	0.0023	0.0020	115		70 - 130	M	5/7/2015	14:26	A050715C 1
	Manganese	0.0056	0.0050	112		70 - 130	M	5/7/2015	14:26	A050715C 1
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/7/2015	14:26	A050715C 1
	Nickel	0.0052	0.0050	104		70 - 130	M	5/7/2015	14:26	A050715C 1
	Selenium	0.0058	0.0050	116		70 - 130	M	5/7/2015	14:26	A050715C 1
	Silver	0.0022	0.0020	110		70 - 130	M	5/7/2015	14:26	A050715C 1
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	14:26	A050715C 1
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/7/2015	14:26	A050715C 1

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1021	0.1000	102		90 - 110	M	5/7/2015	15:10	A050715C 1
	Arsenic	0.1030	0.1000	103		90 - 110	M	5/7/2015	15:10	A050715C 1
	Barium	0.0988	0.1000	99		90 - 110	M	5/7/2015	15:10	A050715C 1
	Beryllium	0.0971	0.1000	97		90 - 110	M	5/7/2015	15:10	A050715C 1
	Cadmium	0.1030	0.1000	103		90 - 110	M	5/7/2015	15:10	A050715C 1
	Chromium	0.1015	0.1000	102		90 - 110	M	5/7/2015	15:10	A050715C 1
	Cobalt	0.1014	0.1000	101		90 - 110	M	5/7/2015	15:10	A050715C 1
	Copper	0.1013	0.1000	101		90 - 110	M	5/7/2015	15:10	A050715C 1
	Lead	0.1029	0.1000	103		90 - 110	M	5/7/2015	15:10	A050715C 1
	Manganese	0.1024	0.1000	102		90 - 110	M	5/7/2015	15:10	A050715C 1
	Molybdenum	0.1025	0.1000	102		90 - 110	M	5/7/2015	15:10	A050715C 1
	Nickel	0.0990	0.1000	99		90 - 110	M	5/7/2015	15:10	A050715C 1
	Selenium	0.1008	0.1000	101		90 - 110	M	5/7/2015	15:10	A050715C 1
	Silver	0.0950	0.1000	95		90 - 110	M	5/7/2015	15:10	A050715C 1
	Thallium	0.0980	0.1000	98		90 - 110	M	5/7/2015	15:10	A050715C 1
	Vanadium	0.1007	0.1000	101		90 - 110	M	5/7/2015	15:10	A050715C 1
LLCCV										
	Antimony	0.0024	0.0020	120		70 - 130	M	5/7/2015	15:18	A050715C 1
	Arsenic	0.0034	0.0030	113		70 - 130	M	5/7/2015	15:18	A050715C 1
	Barium	0.0050	0.0050	100		70 - 130	M	5/7/2015	15:18	A050715C 1
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/7/2015	15:18	A050715C 1
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/7/2015	15:18	A050715C 1
	Chromium	0.0021	0.0020	105		70 - 130	M	5/7/2015	15:18	A050715C 1
	Cobalt	0.0054	0.0050	108		70 - 130	M	5/7/2015	15:18	A050715C 1
	Copper	0.0054	0.0050	108		70 - 130	M	5/7/2015	15:18	A050715C 1
	Lead	0.0022	0.0020	110		70 - 130	M	5/7/2015	15:18	A050715C 1
	Manganese	0.0054	0.0050	108		70 - 130	M	5/7/2015	15:18	A050715C 1
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/7/2015	15:18	A050715C 1
	Nickel	0.0050	0.0050	100		70 - 130	M	5/7/2015	15:18	A050715C 1
	Selenium	0.0052	0.0050	104		70 - 130	M	5/7/2015	15:18	A050715C 1
	Silver	0.0021	0.0020	105		70 - 130	M	5/7/2015	15:18	A050715C 1
	Thallium	0.0011	0.0010	110		70 - 130	M	5/7/2015	15:18	A050715C 1
	Vanadium	0.0023	0.0020	115		70 - 130	M	5/7/2015	15:18	A050715C 1

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/6/2015	23:20	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/6/2015	23:20	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/6/2015	23:20	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/6/2015	23:20	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/6/2015	23:20	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/6/2015	23:20	A050615B 225
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	03:53	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	03:53	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	03:53	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	03:53	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	03:53	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	03:53	A050615B 225

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	04:42	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	04:42	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	04:42	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	04:42	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	04:42	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	04:42	A050615B 225

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	05:30	A050615B 225
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	05:30	A050615B 225
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	05:30	A050615B 225
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	05:30	A050615B 225
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	05:30	A050615B 225
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	05:30	A050615B 225
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	12:21	A050715C 115
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	12:21	A050715C 115
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	12:21	A050715C 115
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	12:21	A050715C 115
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	12:21	A050715C 115
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	12:21	A050715C 115

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	14:22	A050715C 115
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	14:22	A050715C 115
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	14:22	A050715C 115
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	14:22	A050715C 115
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	14:22	A050715C 115
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	14:22	A050715C 115

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/7/2015	15:14	A050715C 115
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/7/2015	15:14	A050715C 115
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/7/2015	15:14	A050715C 115
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/7/2015	15:14	A050715C 115
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/7/2015	15:14	A050715C 115
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/7/2015	15:14	A050715C 115

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173828			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/7/2015	04:08	A050615B 2250
	Barium	0.00273	J		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/7/2015	04:08	A050615B 2250
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/7/2015	04:08	A050615B 2250
	Chromium	0.00083	J		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	5/7/2015	04:08	A050615B 2250
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/7/2015	04:08	A050615B 2250
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/7/2015	04:08	A050615B 2250
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/7/2015	04:08	A050615B 2250

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Arsenic	0.0002				-0.00300 - -0.00300	5/6/2015	23:39	A050615B 22
	Barium	0.0004				-0.01000 - -0.01000	5/6/2015	23:39	A050615B 22
	Beryllium	0.00002				-0.001000 - -0.001000	5/6/2015	23:39	A050615B 22
	Cadmium	0.0009				-0.00100 - -0.00100	5/6/2015	23:39	A050615B 22
	Chromium	0.0004				-0.00400 - -0.00400	5/6/2015	23:39	A050615B 22
	Cobalt	0.0007				-0.00600 - -0.00600	5/6/2015	23:39	A050615B 22
	Copper	0.0014				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Lead	0.0001				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Manganese	0.0014				-0.01000 - -0.01000	5/6/2015	23:39	A050615B 22
	Molybdenum	2.0846	2.00000	104		80 - 120%	5/6/2015	23:39	A050615B 22
	Nickel	0.0007				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Selenium	0.0000				-0.00500 - -0.00500	5/6/2015	23:39	A050615B 22
	Silver	0.0005				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
	Thallium	0.00002				-0.001000 - -0.001000	5/6/2015	23:39	A050615B 22
	Vanadium	0.0002				-0.00200 - -0.00200	5/6/2015	23:39	A050615B 22
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/6/2015	23:43	A050615B 22
	Arsenic	0.0207	0.02000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Barium	0.0004				-0.00500 - -0.00500	5/6/2015	23:43	A050615B 22
	Beryllium	0.00002				-0.001000 - -0.001000	5/6/2015	23:43	A050615B 22
	Cadmium	0.0106	0.01000	106		80 - 120%	5/6/2015	23:43	A050615B 22
	Chromium	0.0205	0.02000	102		80 - 120%	5/6/2015	23:43	A050615B 22
	Cobalt	0.0396	0.04000	99		80 - 120%	5/6/2015	23:43	A050615B 22
	Copper	0.0209	0.02000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Lead	0.0002				-0.00200 - -0.00200	5/6/2015	23:43	A050615B 22
	Manganese	0.0217	0.02000	108		80 - 120%	5/6/2015	23:43	A050615B 22
	Molybdenum	2.0862	2.00000	104		80 - 120%	5/6/2015	23:43	A050615B 22
	Nickel	0.0373	0.04000	93		80 - 120%	5/6/2015	23:43	A050615B 22
	Selenium	0.0189	0.02000	94		80 - 120%	5/6/2015	23:43	A050615B 22
	Silver	0.0206	0.02000	103		80 - 120%	5/6/2015	23:43	A050615B 22
	Thallium	0.00002				-0.001000 - -0.001000	5/6/2015	23:43	A050615B 22
	Vanadium	0.0417	0.04000	104		80 - 120%	5/6/2015	23:43	A050615B 22

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/7/2015	12:28	A050715C 11
	Arsenic	0.0002				-0.00300 - -0.00300	5/7/2015	12:28	A050715C 11
	Barium	0.0003				-0.01000 - -0.01000	5/7/2015	12:28	A050715C 11
	Beryllium	0.00002				-0.001000 - -0.001000	5/7/2015	12:28	A050715C 11
	Cadmium	0.0008				-0.00100 - -0.00100	5/7/2015	12:28	A050715C 11
	Chromium	0.0005				-0.00400 - -0.00400	5/7/2015	12:28	A050715C 11
	Cobalt	0.0006				-0.00600 - -0.00600	5/7/2015	12:28	A050715C 11
	Copper	0.0012				-0.00500 - -0.00500	5/7/2015	12:28	A050715C 11
	Lead	0.0002				-0.00200 - -0.00200	5/7/2015	12:28	A050715C 11
	Manganese	0.0012				-0.01000 - -0.01000	5/7/2015	12:28	A050715C 11
	Molybdenum	1.8137	2.00000	91		80 - 120%	5/7/2015	12:28	A050715C 11
	Nickel	0.0006				-0.00500 - -0.00500	5/7/2015	12:28	A050715C 11
	Selenium	0.0001				-0.00500 - -0.00500	5/7/2015	12:28	A050715C 11
	Silver	0.0004				-0.00200 - -0.00200	5/7/2015	12:28	A050715C 11
	Thallium	0.00006				-0.001000 - -0.001000	5/7/2015	12:28	A050715C 11
	Vanadium	0.0003				-0.00200 - -0.00200	5/7/2015	12:28	A050715C 11
ICSAB									
	Antimony	0.0006				-0.00200 - -0.00200	5/7/2015	12:32	A050715C 11
	Arsenic	0.0235	0.02000	118		80 - 120%	5/7/2015	12:32	A050715C 11
	Barium	0.0003				-0.00500 - -0.00500	5/7/2015	12:32	A050715C 11
	Beryllium	0.00002				-0.001000 - -0.001000	5/7/2015	12:32	A050715C 11
	Cadmium	0.0116	0.01000	116		80 - 120%	5/7/2015	12:32	A050715C 11
	Chromium	0.0230	0.02000	115		80 - 120%	5/7/2015	12:32	A050715C 11
	Cobalt	0.0437	0.04000	109		80 - 120%	5/7/2015	12:32	A050715C 11
	Copper	0.0229	0.02000	114		80 - 120%	5/7/2015	12:32	A050715C 11
	Lead	0.0003				-0.00200 - -0.00200	5/7/2015	12:32	A050715C 11
	Manganese	0.0239	0.02000	120		80 - 120%	5/7/2015	12:32	A050715C 11
	Molybdenum	2.2975	2.00000	115		80 - 120%	5/7/2015	12:32	A050715C 11
	Nickel	0.0408	0.04000	102		80 - 120%	5/7/2015	12:32	A050715C 11
	Selenium	0.0217	0.02000	108		80 - 120%	5/7/2015	12:32	A050715C 11
	Silver	0.0225	0.02000	112		80 - 120%	5/7/2015	12:32	A050715C 11
	Thallium	0.00002				-0.001000 - -0.001000	5/7/2015	12:32	A050715C 11
	Vanadium	0.0461	0.04000	115		80 - 120%	5/7/2015	12:32	A050715C 11

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173829									
	Antimony	mg/L	0.2220	0.2222		100		80 - 120	M
	Arsenic	mg/L	0.2220	0.2083		94		80 - 120	M
	Barium	mg/L	2.2220	2.1303		96		80 - 120	M
	Beryllium	mg/L	0.2220	0.2018		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2091		94		80 - 120	M
	Chromium	mg/L	0.2220	0.2256		102		80 - 120	M
	Cobalt	mg/L	0.2220	0.2268		102		80 - 120	M
	Copper	mg/L	0.2220	0.2222		100		80 - 120	M
	Lead	mg/L	0.2220	0.2251		101		80 - 120	M
	Manganese	mg/L	0.2220	0.2274		102		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2224		100		80 - 120	M
	Nickel	mg/L	0.2220	0.2225		100		80 - 120	M
	Selenium	mg/L	0.2220	0.1924		87		80 - 120	M
	Silver	mg/L	0.1110	0.1121		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2206		99		80 - 120	M
	Vanadium	mg/L	0.2220	0.2240		101		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2250												
BLK	BLK	2254	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2258	101		99		100		100		101		99	
STANDARD 2	STANDARD 2	2302	103		100		102		102		104		93	
STANDARD 3	STANDARD 3	2305	102		99		100		100		102		99	
STANDARD 4	STANDARD 4	2309	101		98		99		100		102		100	
STANDARD 5	STANDARD 5	2313	101		98		99		99		102		99	
ICV	ICV	2316	102		99		101		101		104		102	
ICB1	ICB	2320	101		100		101		101		103		102	
LLICV	LLICV	2324	101		100		100		100		101		102	
ICS-A1	ZZZZZZ	2328												
ICS-AB1	ZZZZZZ	2332												
CHECK	ZZZZZZ	2335												
ICS-A2	ICSA	2339	93		101		97		102		108		102	
ICS-AB2	ICSAB	2343	93		101		97		101		103		101	
CHECK	ZZZZZZ	2347												
CHECK	ZZZZZZ	2350												
2173632	ZZZZZZ	2354												
2173634	ZZZZZZ	2358												
2173662	ZZZZZZ	0002												
2173664	ZZZZZZ	0005												
2173692	ZZZZZZ	0009												
2173694	ZZZZZZ	0013												
2068641001	ZZZZZZ	0017												
2068490001	ZZZZZZ	0020												
2068490002	ZZZZZZ	0024												
2068490003	ZZZZZZ	0028												
CCV1	ZZZZZZ	0032												
CCB1	ZZZZZZ	0036												
LLCCV	ZZZZZZ	0039												
2068843001	ZZZZZZ	0043												
2173697	ZZZZZZ	0047												
2173698	ZZZZZZ	0050												
2068843001P	ZZZZZZ	0054												
2173634	ZZZZZZ	0058												
2068641001	ZZZZZZ	0102												
2068597001	ZZZZZZ	0106												
2173637	ZZZZZZ	0109												
2173638	ZZZZZZ	0113												
2173637	ZZZZZZ	0117												
CCV2	ZZZZZZ	0121												
CCB2	ZZZZZZ	0124												
LLCCV	ZZZZZZ	0128												
2068597001P	ZZZZZZ	0132												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068597002	ZZZZZZ	0136												
2068597003	ZZZZZZ	0140												
2068597004	ZZZZZZ	0143												
2068597005	ZZZZZZ	0147												
2068597006	ZZZZZZ	0151												
2068597007	ZZZZZZ	0155												
2068597008	ZZZZZZ	0159												
2068597009	ZZZZZZ	0202												
2068740001	ZZZZZZ	0206												
CCV3	ZZZZZZ	0210												
CCB3	ZZZZZZ	0214												
LLCCV	ZZZZZZ	0217												
2068740001L	ZZZZZZ	0221												
2068740002	ZZZZZZ	0225												
2068740003	ZZZZZZ	0229												
2068740004	ZZZZZZ	0233												
2068740005	ZZZZZZ	0237												
2068740006	ZZZZZZ	0240												
2068740007	ZZZZZZ	0244												
2068740008	ZZZZZZ	0248												
2068740009	ZZZZZZ	0252												
2173667	ZZZZZZ	0256												
CCV4	ZZZZZZ	0259												
CCB4	ZZZZZZ	0303												
LLCCV	ZZZZZZ	0307												
2173668	ZZZZZZ	0311												
2068740009P	ZZZZZZ	0314												
2173668	ZZZZZZ	0318												
2068740010	ZZZZZZ	0322												
2068731001	ZZZZZZ	0326												
2068541004	ZZZZZZ	0330												
2068541005	ZZZZZZ	0334												
2068541006	ZZZZZZ	0337												
2068541007	ZZZZZZ	0341												
2068541008	ZZZZZZ	0345												
CCV5	CCV	0349	109		108		111		110		107		114	
CCB5	CCB	0353	107		108		108		107		105		112	
LLCCV	LLCCV	0356	107		109		109		108		99		104	
2068541009	ZZZZZZ	0400												
2068541010	ZZZZZZ	0404												
2173828	MB for HBN 71284	0408	107		125		107		106		102		110	
2173829	LCS for HBN 7128	0412	104		129		104		103		99		109	
2068544003	ZZZZZZ	0415												
2068544003S	ZZZZZZ	0419												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2068544003S	ZZZZZZ	0423												
2068842002	MRC-MW-68A-05051	0426	91		130	*	95		99		97		104	
2068842003	MRC-MW-67A-05051	0430	88		135	*	93		99		99		102	
2068842004	ZZZZZZ	0434												
CCV6	CCV	0438	112		111		112		112		112		111	
CCB6	CCB	0442	109		108		110		109		108		110	
LLCCV	LLCCV	0445	110		110		111		110		109		112	
2068842005	MRC-MW-DUP04-050	0449	89		140	*	97		105		111		116	
2068842006	MRC-MW-17A-05051	0453	93		131	*	98		103		102		106	
2068842007	MRC-MW-69A-05051	0457	95		131	*	100		103		100		107	
2068842002	ZZZZZZ	0501												
2068842003	MRC-MW-67A-05051	0504	102		106		105		107		106		107	
2068842005	MRC-MW-DUP04-050	0508	89		142	*	97		106		110		108	
2068514001	ZZZZZZ	0512												
2068514002	ZZZZZZ	0515												
2068712001	ZZZZZZ	0519												
2068712002	ZZZZZZ	0523												
CCV7	CCV	0527	112		110		112		111		107		111	
CCB7	CCB	0530	109		107		110		108		108		110	
LLCCV	LLCCV	0534	110		108		110		108		107		110	
2068712003	ZZZZZZ	0538												
2068713001	ZZZZZZ	0541												
2068713001L	ZZZZZZ	0545												
2068713002	ZZZZZZ	0549												
2068713003	ZZZZZZ	0553												
2068713004	ZZZZZZ	0556												
2068714001	ZZZZZZ	0600												
2068714002	ZZZZZZ	0604												
CCV8	ZZZZZZ	0608												
CCB8	ZZZZZZ	0611												
LLCCV	ZZZZZZ	0615												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/07/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	1151												
BLK	BLK	1155	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	1158	101		100		100		100		104		100	
STANDARD 2	STANDARD 2	1202	99		98		98		98		84		93	
STANDARD 3	STANDARD 3	1206	102		99		100		100		100		100	
STANDARD 4	STANDARD 4	1209	101		98		100		100		100		100	
STANDARD 5	STANDARD 5	1213	101		99		100		100		100		99	
ICV	ICV	1217	101		99		101		100		99		97	
ICB1	ICB	1221	99		95		98		97		95		92	
LLICV	LLICV	1224	101		97		99		100		99		97	
ICS-A1	ICSA	1228	91		96		93		98		102		99	
ICS-AB1	ICSAB	1232	93		98		94		99		102		98	
CHECK	ZZZZZZ	1242												
CHECK	ZZZZZZ	1245												
2173475	ZZZZZZ	1249												
2173476	ZZZZZZ	1253												
2067712001	ZZZZZZ	1257												
2067712001L	ZZZZZZ	1300												
2067712001P	ZZZZZZ	1304												
2067712002	ZZZZZZ	1308												
2173477	ZZZZZZ	1312												
2173478	ZZZZZZ	1315												
2067712002P	ZZZZZZ	1319												
2067712003	ZZZZZZ	1323												
CCV1	ZZZZZZ	1327												
CCB1	ZZZZZZ	1331												
LLCCV	ZZZZZZ	1334												
2067712004	ZZZZZZ	1338												
2067712005	ZZZZZZ	1342												
2067712006	ZZZZZZ	1346												
2067712007	ZZZZZZ	1349												
2067712007	ZZZZZZ	1406												
MN 5PPM LDR	ZZZZZZ	1411												
CHECK	ZZZZZZ	1415												
CCV2	CCV	1418	100		95		98		95		90		95	
CCB2	CCB	1422	99		94		97		93		89		95	
LLCCV	LLCCV	1426	100		94		98		93		90		93	
2062352013	ZZZZZZ	1432												
2062352013	ZZZZZZ	1436												
2068842004	MRC-MW-50A-05051	1448	83		125		86		91		96		95	
CHECK	ZZZZZZ	1456												
60203051 LO	ZZZZZZ	1459												
60203051 LO	ZZZZZZ	1503												
60203051 MD	ZZZZZZ	1507												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/07/2015 End Date: 05/07/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
CCV3	CCV	1510	103		98		100		98		93		97	
CCB3	CCB	1514	101		97		99		96		94		96	
LLCCV	LLCCV	1518	100		95		98		95		89		92	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2250												
BLK	2254	100											
STANDARD 1	2258	100											
STANDARD 2	2302	102											
STANDARD 3	2305	101											
STANDARD 4	2309	100											
STANDARD 5	2313	100											
ICV	2316	101											
ICB	2320	102											
LLICV	2324	101											
ZZZZZZ	2328												
ZZZZZZ	2332												
ZZZZZZ	2335												
ICSA	2339	102											
ICSAB	2343	102											
ZZZZZZ	2347												
ZZZZZZ	2350												
ZZZZZZ	2354												
ZZZZZZ	2358												
ZZZZZZ	0002												
ZZZZZZ	0005												
ZZZZZZ	0009												
ZZZZZZ	0013												
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0028												
ZZZZZZ	0032												
ZZZZZZ	0036												
ZZZZZZ	0039												
ZZZZZZ	0043												
ZZZZZZ	0047												
ZZZZZZ	0050												
ZZZZZZ	0054												
ZZZZZZ	0058												
ZZZZZZ	0102												
ZZZZZZ	0106												
ZZZZZZ	0109												
ZZZZZZ	0113												
ZZZZZZ	0117												
ZZZZZZ	0121												
ZZZZZZ	0124												
ZZZZZZ	0128												
ZZZZZZ	0132												
ZZZZZZ	0136												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0140												
ZZZZZZ	0143												
ZZZZZZ	0147												
ZZZZZZ	0151												
ZZZZZZ	0155												
ZZZZZZ	0159												
ZZZZZZ	0202												
ZZZZZZ	0206												
ZZZZZZ	0210												
ZZZZZZ	0214												
ZZZZZZ	0217												
ZZZZZZ	0221												
ZZZZZZ	0225												
ZZZZZZ	0229												
ZZZZZZ	0233												
ZZZZZZ	0237												
ZZZZZZ	0240												
ZZZZZZ	0244												
ZZZZZZ	0248												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0259												
ZZZZZZ	0303												
ZZZZZZ	0307												
ZZZZZZ	0311												
ZZZZZZ	0314												
ZZZZZZ	0318												
ZZZZZZ	0322												
ZZZZZZ	0326												
ZZZZZZ	0330												
ZZZZZZ	0334												
ZZZZZZ	0337												
ZZZZZZ	0341												
ZZZZZZ	0345												
CCV	0349	110											
CCB	0353	109											
LLCCV	0356	109											
ZZZZZZ	0400												
ZZZZZZ	0404												
MB for HBN 71284	0408	109											
LCS for HBN 7128	0412	108											
ZZZZZZ	0415												
ZZZZZZ	0419												
ZZZZZZ	0423												
MRC-MW-68A-05051	0426	106											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/06/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
MRC-MW-67A-05051	0430	108											
ZZZZZZ	0434												
CCV	0438	113											
CCB	0442	111											
LLCCV	0445	112											
MRC-MW-DUP04-050	0449	102											
MRC-MW-17A-05051	0453	103											
MRC-MW-69A-05051	0457	105											
ZZZZZZ	0501												
MRC-MW-67A-05051	0504	109											
MRC-MW-DUP04-050	0508	102											
ZZZZZZ	0512												
ZZZZZZ	0515												
ZZZZZZ	0519												
ZZZZZZ	0523												
CCV	0527	113											
CCB	0530	111											
LLCCV	0534	110											
ZZZZZZ	0538												
ZZZZZZ	0541												
ZZZZZZ	0545												
ZZZZZZ	0549												
ZZZZZZ	0553												
ZZZZZZ	0556												
ZZZZZZ	0600												
ZZZZZZ	0604												
ZZZZZZ	0608												
ZZZZZZ	0611												
ZZZZZZ	0615												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/07/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1151												
BLK	1155	100											
STANDARD 1	1158	101											
STANDARD 2	1202	99											
STANDARD 3	1206	101											
STANDARD 4	1209	101											
STANDARD 5	1213	101											
ICV	1217	101											
ICB	1221	98											
LLICV	1224	101											
ICSA	1228	99											
ICSAB	1232	100											
ZZZZZZ	1242												
ZZZZZZ	1245												
ZZZZZZ	1249												
ZZZZZZ	1253												
ZZZZZZ	1257												
ZZZZZZ	1300												
ZZZZZZ	1304												
ZZZZZZ	1308												
ZZZZZZ	1312												
ZZZZZZ	1315												
ZZZZZZ	1319												
ZZZZZZ	1323												
ZZZZZZ	1327												
ZZZZZZ	1331												
ZZZZZZ	1334												
ZZZZZZ	1338												
ZZZZZZ	1342												
ZZZZZZ	1346												
ZZZZZZ	1349												
ZZZZZZ	1406												
ZZZZZZ	1411												
ZZZZZZ	1415												
CCV	1418	99											
CCB	1422	99											
LLCCV	1426	99											
ZZZZZZ	1432												
ZZZZZZ	1436												
MRC-MW-50A-05051	1448	91											
ZZZZZZ	1456												
ZZZZZZ	1459												
ZZZZZZ	1503												
ZZZZZZ	1507												
CCV	1510	102											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-030

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/07/2015 End Date: 05/07/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
CCB	1514	101											
LLCCV	1518	99											

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71520						
2174199	MB for HBN 71520 [MDIG/50714	MB	QC-WAT	5/7/15	45.0	50.0	
2174200	LCS for HBN 71520 [MDIG/50714	LCS	QC-WAT	5/7/15	45.0	50.0	
2068842002	MRC-MW-68A-050515	SAM	WATER	5/7/15	45.0	50.0	
2068842004	MRC-MW-50A-050515	SAM	WATER	5/7/15	45.0	50.0	
2068842005	MRC-MW-DUP04-050515	SAM	WATER	5/7/15	45.0	50.0	
2068842006	MRC-MW-17A-050515	SAM	WATER	5/7/15	45.0	50.0	
2068842007	MRC-MW-69A-050515	SAM	WATER	5/7/15	45.0	50.0	
2068842003	MRC-MW-67A-050515	SAM	WATER	5/7/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0937												X													
ICAL2	1.00	0941												X													
ICAL3	1.00	0945												X													
ICAL4	1.00	0949												X													
ICAL5	1.00	0952												X													
ICV1	1.00	0958												X													
ICB1	1.00	1002												X													
CRDL1	1.00	1009												X													
ZZZZZZ	1.00	1013																									
CCV1	1.00	1016												X													
HIGH	1.00	1020												X													
ICS-A1	1.00	1023												X													
ICS-AB1	1.00	1027												X													
ZZZZZZ	1.00	1033																									
ZZZZZZ	1.00	1036																									
ZZZZZZ	200.00	1040																									
ZZZZZZ	10.00	1043																									
ZZZZZZ	50.00	1047																									
ZZZZZZ	10.00	1051																									
ZZZZZZ	5.00	1055																									
ZZZZZZ	5.00	1059																									
ZZZZZZ	5.00	1102																									
ZZZZZZ	1.00	1106																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1140																									
ZZZZZZ	1.00	1143																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1204																									
ZZZZZZ	5.00	1208																									
ZZZZZZ	5.00	1211																									
ZZZZZZ	5.00	1215																									
ZZZZZZ	5.00	1219																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1223																								
ZZZZZZ	5.00	1227																								
ZZZZZZ	1.00	1230																								
ZZZZZZ	1.00	1234																								
ZZZZZZ	5.00	1238																								
ZZZZZZ	5.00	1241																								
ZZZZZZ	5.00	1245																								
ZZZZZZ	5.00	1249																								
ZZZZZZ	10.00	1253																								
ZZZZZZ	5.00	1257																								
ZZZZZZ	5.00	1301																								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1308																								
ZZZZZZ	1.00	1312																								
ZZZZZZ	1.00	1316																								
ZZZZZZ	1.00	1319																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	5.00	1329																								
ZZZZZZ	1.00	1333																								
ZZZZZZ	1.00	1345																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1352																								
ZZZZZZ	1.00	1356																								
ZZZZZZ	1.00	1400																								
ZZZZZZ	1.00	1404																								
ZZZZZZ	1.00	1407																								
ZZZZZZ	1.00	1411																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1422																								
ZZZZZZ	1.00	1426																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1433																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1444																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050815 3015

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1448																										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1455																										
CCV6	1.00	1459												X														
CCB6	1.00	1502												X														
2174199	1.00	1506												X														
2174200	1.00	1510												X														
ZZZZZZ	1.00	1514																										
ZZZZZZ	1.00	1517																										
2068842002	1.00	1521												X														
ZZZZZZ	1.00	1525																										
2068842004	1.00	1529												X														
2068842005	1.00	1533												X														
2068842006	1.00	1536												X														
2068842007	1.00	1540												X														
CCV7	1.00	1545												X														
CCB7	1.00	1548												X														
2068842003	2.00	1552												X														
ZZZZZZ	1.00	1556																										
ZZZZZZ	1.00	1600																										
ZZZZZZ	1.00	1604																										
ZZZZZZ	1.00	1607																										
ZZZZZZ	1.00	1611																										
CCV8	1.00	1615												X														
CCB8	1.00	1618												X														
LLCCV	1.00	1744												X														
ZZZZZZ	1.00	1747																										
ICS-A3	1.00	1753												X														
ICS-AB3	1.00	1757												X														
ZZZZZZ	1.00	1801																										

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.942	1.000	94		90 - 110	P	5/8/2015	09:58	050815 3015
CCV	Iron	2.505	2.500	100		90 - 110	P	5/8/2015	10:16	050815 3015
CCV	Iron	2.501	2.500	100		90 - 110	P	5/8/2015	14:59	050815 3015
CCV	Iron	2.522	2.500	101		90 - 110	P	5/8/2015	15:45	050815 3015
CCV	Iron	2.439	2.500	98		90 - 110	P	5/8/2015	16:15	050815 3015
LLCCV	Iron	0.061	0.060	102		70 - 130	P	5/8/2015	17:44	050815 3015

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.065	0.060	108		70 - 130	P	5/8/2015	10:09	050815 301

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	10:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	15:02	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	15:48	050815 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/8/2015	16:18	050815 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2174199			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/8/2015	15:06	050815 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	10:23	050815 3015
ICSAB									
	Iron	119.3	125.0	95		80 - 120%	5/8/2015	10:27	050815 3015
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/8/2015	17:53	050815 3015
ICSAB									
	Iron	115.5	125.0	92		80 - 120%	5/8/2015	17:57	050815 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2174200									
	Iron	mg/L	1.11	1.147		103		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

6010C 3015

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71840						
2174822	MB for HBN 71840 [MDIG/50732	MB	QC-WAT	5/8/15	25.0	25.0	
2174823	LCS for HBN 71840 [MDIG/50732	LCS	QC-WAT	5/8/15	25.0	25.0	
2068842002	MRC-MW-68A-050515	SAM	WATER	5/8/15	25.0	25.0	
2068842003	MRC-MW-67A-050515	SAM	WATER	5/8/15	25.0	25.0	
2068842004	MRC-MW-50A-050515	SAM	WATER	5/8/15	25.0	25.0	
2068842005	MRC-MW-DUP04-050515	SAM	WATER	5/8/15	25.0	25.0	
2068842006	MRC-MW-17A-050515	SAM	WATER	5/8/15	25.0	25.0	
2068842007	MRC-MW-69A-050515	SAM	WATER	5/8/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Cetac Hg Method: CV Run Number: 050815W

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1132																X								
Standard #1 (0.2ppb	1.00	1133																X								
	1.00	1134																X								
	1.00	1135																X								
	1.00	1136																X								
	1.00	1137																X								
ICV1	1.00	1138																X								
ICB1	1.00	1140																X								
2174822	1.00	1141																X								
2174823	1.00	1142																X								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1144																								
ZZZZZZ	1.00	1145																								
ZZZZZZ	1.00	1146																								
ZZZZZZ	1.00	1147																								
ZZZZZZ	1.00	1148																								
ZZZZZZ	1.00	1149																								
2068842002	1.00	1150																X								
CCV1	1.00	1151																X								
CCB1	1.00	1152																X								
2068842003	1.00	1153																X								
2068842004	1.00	1154																X								
2068842005	1.00	1155																X								
2068842006	1.00	1157																X								
2068842007	1.00	1158																X								
ZZZZZZ	1.00	1159																								
ZZZZZZ	1.00	1200																								
ZZZZZZ	1.00	1201																								
ZZZZZZ	1.00	1202																								
ZZZZZZ	1.00	1203																								
CCV2	1.00	1204																X								
CCB2	1.00	1205																X								
ZZZZZZ	1.00	1206																								
ZZZZZZ	1.00	1207																								
ZZZZZZ	1.00	1208																								
ZZZZZZ	1.00	1209																								

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Cetac Hg Method: CV Run Number: 050815W

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1210																								
ZZZZZZ	1.00	1212																								
ZZZZZZ	1.00	1213																								
ZZZZZZ	1.00	1214																								
ZZZZZZ	1.00	1215																								
ZZZZZZ	1.00	1216																								
ZZZZZZ	1.00	1217																								
ZZZZZZ	1.00	1218																								
ZZZZZZ	1.00	1219																								
ZZZZZZ	1.00	1220																								
ZZZZZZ	1.00	1221																								
ZZZZZZ	1.00	1222																								
ZZZZZZ	1.00	1223																								
ZZZZZZ	1.00	1225																								
ZZZZZZ	1.00	1226																								
ZZZZZZ	1.00	1227																								
ZZZZZZ	1.00	1228																								
ZZZZZZ	1.00	1229																								
ZZZZZZ	1.00	1230																								
ZZZZZZ	1.00	1231																								
ZZZZZZ	1.00	1232																								
ZZZZZZ	1.00	1233																								
ZZZZZZ	1.00	1234																								
ZZZZZZ	1.00	1235																								
ZZZZZZ	1.00	1237																								
ZZZZZZ	1.00	1238																								
ZZZZZZ	1.00	1239																								
ZZZZZZ	1.00	1240																								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1249																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM030|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-030

Instrument ID Number: Cetac Hg Method: CV Run Number: 050815W

Start Date: 5/8/2015 End Date: 5/8/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|12IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/8/2015	11:38	050815W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	5/8/2015	11:51	050815W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	5/8/2015	12:04	050815W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/8/2015	11:40	050815W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/8/2015	11:52	050815W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/8/2015	12:05	050815W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2174822			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/8/2015	11:41	050815W

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-030

Contract: TMM030|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2174823									
	Mercury	mg/L	0.0020	0.0022		110		85 - 115	CV

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1512733

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1566 (148781)

General Set Information: There were nine field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 447081) was less than 1/2 the CRDL. The recovery for the LCS (447082) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1512733001 (Client ID: 2068842 004). The percent recovery for the MS analysis failed QC acceptance criteria. The relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 06MAYP-02/03/07/10/17/20.

Thomas Bosch — May19, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Report Date: May 21, 2015

Debra Musser
ALS Environmental- Middletown
34 Dogwood Lane
Middletown, PA 17057

Phone: 717 944-5541 x 3162

E-mail: Debra.musser@alsglobal.com

Workorder: **34-1512733**
Project ID: 2068842
Purchase Order: 2068842

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
2068842 004	1512733001	05/05/15	05/07/15	
2068842 005 (DUP)	1512733002	05/05/15	05/07/15	
2068842 006	1512733003	05/05/15	05/07/15	
2068842 007	1512733004	05/05/15	05/07/15	
2068842 008	1512733005	05/05/15	05/07/15	

14348/#1
1512733

1512733

Analytical Laboratory Services, Inc.
Environmental • Industrial Hygiene • Field Services
34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #:	1 of 1
ALSI Quote #:	

Client Name: ALS Global
Address: 34 Dogwood Lane
Middletown, PA 17057
Contact: Debra Musser
Phone#: 7179445541x3153
Project Name/#:
Bill To:

TAT ☐ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALSI approval and surcharges.
Date Required: _____ Approved By: _____
Email? [x] -Y Debra.Musser@alsglobal.com
Fax? ☐ -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)	Enter Number of Containers Per Sample or Field Results Below.
2068842 004	5/5/15	1210	C	GW				X	Subcontract: ALS Salt Lake City
2068842 005 (dup)	5/5/15		C	GW				X	
2068842 006	5/5/15	1420	C	GW				X	
2068842 007	5/5/15	1048	C	GW				X	Level IV Package Needed
2068842 008	5/5/15	1247	C	GW				X	TetraTech EDD also required

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____
Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?		
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____
Tracking #: _____

Sample/COC Comments

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments: Due 5/19/15

Logged By (initials/date/time) _____
Reviewed By (initials/date/time) _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	5/6/15	1500	2 Desmottell /ALS	5-7-15	9:35
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐ Standard ☒ CLP-like ☐ USACE ☐

Special Processing: USACE ☐ Navy ☐ DOD ☐

State Samples Collected In: ☐ NY ☐ NJ ☐ PA ☐ NC ☐

Reportable to PADEP? Yes ☐
PWSID # _____

Sample Disposal: Lab ☐ Special ☐

EDDS: Format Type- ADR/SEDD

* G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: 2068842	Split:	Workorder ID: 1512733	Level: ENV_LVL4
Client: ALS Environmental		Account: 8001	Type: 250Poly
Comments:			Preservatives

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850
1	05/05/2015 12:10	2068842 004	1512733001		Water	A	1	A
2	05/05/2015 00:00	2068842 005 (DUP)	1512733002	DUP	Water	A	1	A
3	05/05/2015 14:20	2068842 006	1512733003		Water	A	1	A
4	05/05/2015 10:48	2068842 007	1512733004		Water	A	1	A
5	05/05/2015 12:47	2068842 008	1512733005		Water	A	1	A
6								
7								
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/07/2015 09:33	ALS Sample Receiving	Sample Login
Julie Warath 5/7/15 1500	15B		Storage
R.33.1 5.11.15/13:10	T.Bosch		6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Middletown

Project/Task/Site: 15127733

Date/Time of Receipt: 05/7/15 9:33

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 60475	4.3 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: [signature] (Signature) Desiree Hill (Printed Name) 05/07/15 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.dot

Revised 1/1/15

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1512733

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1566 (HBN: 148781)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 447081
Analyzed: 05/15/2015 13:11
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 447082
Analyzed: 05/15/2015 13:30
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.04	5.00	101	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1512733001	**MS:** 447083	**MSD:** 447084
Analyzed: 05/15/2015 13:49	**Analyzed:** 05/15/2015 14:08	**Analyzed:** 05/15/2015 14:28
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.230	4.2	5	* 79.4	85.3	112.8	4.44	84.0	5.39	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1512733

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1566 (HBN: 148781)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	447077			**CCV:**	447085	
Analyzed:	05/15/2015 11:55			**Analyzed:**	05/15/2015 17:38	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.7	25.0	103	25.4	25.0	102

Interference Check Sample

ICSA:	447080		
Analyzed:	05/15/2015 12:52		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.02	1.00	102

Limit of Detection Verification

LODV:	447079			**LODV:**	447086	
Analyzed:	05/15/2015 12:33			**Analyzed:**	05/15/2015 17:57	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.136	0.100	136	0.144	0.100	144

Comments

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	5/20/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

	SAMPLE ID	**MRC-MW-17A-050515**

SAMPLE CALC **for toluene**

IS AREA	**DILUTION**	**COMPOUND OF INTEREST AREA**	**IS AMOUNT (ug/L)**	**Final Extract Volume (mL)**	**AVE RRF**	**CONCENTRATION (ug/L)**
820624	1	2082937	30	5	1.7032	44.71

SampleVolume (mL)
5

Sample Calculation

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-17A-050515

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-030

Matrix (soil/water): WATER Lab Sample ID: 2068842006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050681.D

Level (low/med): Date Received: 5/5/15

% Moisture: not dec. 100.0 Date Analyzed: 5/7/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	4.4	
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	16.0	
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	44.7	
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	15.5	
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	0.53	J
95-47-6	o-Xylene	5.0	
108383/106423	mp-Xylene	35.4	

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150506A.b\1505068
Lab Smp Id: 2068842006 Client Smp ID: MRC-MW-17A-050515
Inj Date : 07-MAY-2015 02:13
Operator : CJG Inst ID: ms15.i
Smp Info : 2068842006;;1;;;;;
Misc Info : ZZ VOMS 35810 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150506A.b\15-8260
Meth Date : 07-May-2015 10:49 joshua Quant Type: ISTD
Cal Date : 06-MAY-2015 19:56 Cal File: 15050659.D
Als bottle: 30
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	1.455	1.455	(0.372)	10668	0.52953	0.529528(aQ)	
4 Bromomethane	94	Compound Not Detected.						
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	1.831	1.826	(0.468)	290082	29.3940	29.3940	
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	2.017	2.017	(0.516)	8375	0.75822	0.758216(a)	
10 1,1-Dichloroethene	61	Compound Not Detected.						
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	Compound Not Detected.						
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	2.644	2.650	(0.676)	7292	6.14759	6.14759(a)	
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	2.813	2.808	(0.720)	454991	8.26732	8.26732	
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.201	3.201	(0.819)	54632	1.99866	1.99866	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	3.326	3.327	(0.851)	999627	37.8675	37.8675	
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	507071	24.6090	24.6090	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	3.512	3.507	(0.898)	5750	2.58796	2.58796(aQ)	
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	3.675	3.676	(0.940)	13323722	163.002	163.002	
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	575106	28.4427	28.4427	
	52 1,2-Dichloroethane	62	3.795	3.796	(0.971)	24611	0.92233	0.922330(aQ)	
	53 tert-Amyl Alcohol	59	3.812	3.812	(0.975)	120131	160.417	160.417(QH)	
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	2011400	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.009	(1.025)	346830	15.4951	15.4951	
	58 Methyl cyclohexane	83	4.014	4.014	(0.679)	448283	15.9913	15.9913(Q)	
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.859	4.854	(0.822)	1976726	30.1796	30.1796	
	69 Toluene	92	4.898	4.893	(0.828)	2082937	44.7091	44.7091	
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
76	Ethyl Methacrylate	69	Compound Not Detected.						
77	1,1,2-Trichloroethane	83	Compound Not Detected.						
78	Chlorodibromomethane	129	Compound Not Detected.						
79	1,3-Dichloropropane	76	Compound Not Detected.						
80	1,2-Dibromoethane	107	Compound Not Detected.						
81	2-Hexanone	43	Compound Not Detected.						
82	1-Chlorohexane	91	Compound Not Detected.						
* 83	Chlorobenzene-d5	82	5.912	5.913	(1.000)	820624	30.0000		
84	Chlorobenzene	112	Compound Not Detected.						
85	Ethylbenzene	106	5.934	5.935	(1.004)	1859044	64.7194	64.7194	
86	1,1,1,2-Tetrachloroethane	131	Compound Not Detected.						
87	mp-Xylene	106	6.032	6.027	(1.020)	1124475	35.4121	35.4121	
88	o-Xylene	106	6.349	6.349	(1.074)	157368	4.95981	4.95981	
89	Styrene	104	Compound Not Detected.						
90	Bromoform	173	Compound Not Detected.						
91	Isopropylbenzene	105	6.584	6.573	(0.857)	238829	4.41317	4.41317	
$ 92	4-Bromofluorobenzene	174	6.802	6.802	(0.885)	499444	26.6947	26.6947	
93	Bromobenzene	156	Compound Not Detected.						
94	n-Propylbenzene	120	6.900	6.901	(0.898)	146137	6.61597	6.61597	
95	1,1,2,2-Tetrachloroethane	83	Compound Not Detected.						
96	o-Chlorotoluene	91	Compound Not Detected.						
97	1,3,5-Trimethylbenzene	105	7.047	7.042	(0.917)	124704	1.57299	1.57299	
98	1,2,3-Trichloropropane	110	Compound Not Detected.						
99	trans-1,4-Dichloro-2-butene	53	Compound Not Detected.						
M 100	1,2-Dichloroethene, Total	61				54632	1.99866	1.99866(a)	
101	p-Chlorotoluene	91	Compound Not Detected.						
102	tert-Butylbenzene	134	Compound Not Detected.						
103	Pentachloroethane	117	Compound Not Detected.						
104	1,2,4-Trimethylbenzene	105	7.353	7.348	(0.957)	381190	4.68415	4.68415	
105	sec-Butylbenzene	105	7.440	7.435	(0.968)	48512	2.18590	2.18590	
106	p-Isopropyltoluene	134	Compound Not Detected.						
107	1,3-Dichlorobenzene	146	Compound Not Detected.						
* 108	1,4-Dichlorobenzene-d4	152	7.686	7.686	(1.000)	682749	30.0000	(Q)	
109	1,4-Dichlorobenzene	146	Compound Not Detected.						
110	Benzyl Chloride	126	Compound Not Detected.						
111	n-Butylbenzene	134	Compound Not Detected.						
112	Hexachloroethane	117	Compound Not Detected.						
113	1,2-Dichlorobenzene	146	Compound Not Detected.						
114	1,2-Dibromo-3-chloropropane	75	Compound Not Detected.						
115	Nitrobenzene	77	Compound Not Detected.						
116	Hexachlorobutadiene	225	Compound Not Detected.						
117	1,2,4-Trichlorobenzene	180	Compound Not Detected.						
118	Naphthalene	128	9.563	9.558	(1.244)	112690	5.44617	5.44617	
119	1,2,3-Trichlorobenzene	180	Compound Not Detected.						
M 120	1,3-Dichloropropene, Total	75	Compound Not Detected.						
M 121	Total Xylenes	106				1281843	40.3719	40.3719	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
H - Operator selected an alternate compound hit.

Sample Calculation

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-030

Instrument ID: ms15.i Calibration Date(s): 5/6/2015 5/6/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:13 19:56

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15050654.D RRF005 = 15050655.D RRF020 = 15050656.D RRF050 = 15050657.D

RRF100 = 15050658.D RRF200 = 15050659.D RRF00.5 = 15050653.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1896567	1802		L	0.000000	8.815940		0.99420
Isobutyl alcohol	0.01275	0.01035		A		0.013320		11.34263
Isopropyl Alcohol	0.01215			A		0.011660		13.84773
Isopropylbenzene	15688597	21116		Q	-0.303300	4.481020	-0.280680	0.99705
p-Isopropyltoluene	5518358	3516		Q	0.000000	0.806440	0.013640	0.99993
Methyl acetate	0.03868	0.05132		A		0.041720		13.38641
Methyl acrylate	0.24892	0.19454		A		0.213610		9.65808
Methacrylonitrile	1965263	3613		L	0.000000	8.452370		0.99928
Methyl cyclohexane	1.16628	0.75938		A		1.024810		12.35291
Methyl methacrylate	3533618	5264		Q	0.000000	0.164590	0.007600	0.99990
Methyl t-Butyl Ether	0.62166	0.76239		A		0.613510		12.20410
4-Methyl-2-Pentanone(MIBK)	15379643	23095		Q	0.000000	0.612330	-0.004240	0.99946
Methylene Chloride	4289412	31189		L	-0.044780	3.878210		0.99975
Naphthalene	13063474	7645		Q	-0.181350	1.901200	0.038360	0.99880
Nitrobenzene	3016307	2322		Q	0.000000	0.013370	0.000540	0.99998
2-Nitropropane		6242		Q	0.000000	0.102520	0.001330	0.99972
Octane	2705002	1644		Q	0.000000	0.343660	0.010480	0.99987
Pentachloroethane	0.68613	0.68315		A		0.644810		5.44722
Pentane	0.13000			A		0.147190		13.49849
n-Propanol	0.01796			A		0.020610		11.59859
Propionitrile	0.03747	0.04028		A		0.037870		7.09068
n-Propylbenzene	6469443	5320		Q	0.000000	0.967800	0.012550	0.99995
Styrene	13756437	13572		Q	0.000000	2.564560	-0.048590	0.99969
1,1,1,2-Tetrachloroethane	0.78058	0.74486		A		0.714710		5.82953
1,1,2,2-Tetrachloroethane *	0.89416	1.13705		A		0.963530		12.83790
Tetrachloroethene	0.66041	0.85946		A		0.726760		13.66607
Tetrahydrofuran	0.07019			A		0.063070		10.39127
Toluene **	1.87773	1.62388		A		1.703170		9.51883
Total Xylenes	24243472	32906		L	0.000000	0.795940		0.99825
1,2,3-Trichlorobenzene	5886352	4641		Q	0.000000	0.778140	0.026810	0.99990
1,2,4-Trichlorobenzene	7076394	5532		Q	0.000000	0.913420	0.035750	0.99983
1,1,1-Trichloroethane	0.43581	0.50644		A		0.435530		7.74965
1,1,2-Trichloroethane	0.58180	0.66296		A		0.598740		10.65109
Trichloroethene	0.31114	0.40269		A		0.333840		10.82077
Trichlorofluoromethane	0.40286			A		0.440810		11.15185
1,2,3-Trichloropropane	0.27153	0.29007		A		0.282010		7.06711

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/TOTAL METALS/PERCHLORATE LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) SDG 2069284**

SAMPLES:

6/Aqueous/VOCs

MRC-MW-100A-050615	MRC-MW-100B-050615	MRC-MW-19A-050615
MRC-MW-22A-050615	MRC-MW-22B-050615	TB-050615

5/Aqueous/1,4-Dioxane

MRC-MW-100A-050615	MRC-MW-100B-050615	MRC-MW-19A-050615
MRC-MW-22A-050615	MRC-MW-22B-050615	

4/Aqueous/Total Metals

MRC-MW-100B-050615	MRC-MW-19A-050615	MRC-MW-22A-050615
MRC-MW-22B-050615		

1/Aqueous/Perchlorate

MRC-MW-01A-050615

Overview

The sample set for LMC-MRC, SDG 2069284 consisted of six (6) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), 1,4-dixoane, select total metals, and/or perchlorate. No field duplicate sample pairs were included in this SDG.

The samples were collected by Tetra Tech, Inc. on May 6, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A and EPA Methods 522 and 6850 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major – None

Minor

- Continuing calibration verification on 5/15/2015 @ 11:47 had a percent difference for 1,4'-dioxane analyzed by SW-846 method 8260C that was greater than the quality control limit (20%) affecting

all samples. Results for 1,4'-dioxane were qualified as estimated for detects (J) and nondetected results (UJ).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

Results for MRC-MW-100B-050615 exceeded the calibration limit for 1,4-dioxane (analyzed by EPA Method 522) and trichloroethane Therefore, results for these compounds were reported from a 5X dilution.

The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane	0.51	2.55
Carbon disulfide	0.39	1.39
1,4-Dichlorobenzene	0.31	1.55

Maximum concentration detected in the laboratory method blank 2180033 affecting sample MCR-MW-100-B-050615 analyzed at dilution.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as results for these compounds were reported from the non-diluted sample.

Molybdenum was detected in the laboratory preparation blank at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.00090	0.0045

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as molybdenum results were nondetects.

Matrix spike (MS) and matrix spike duplicate (MSD) recoveries were outside of quality control (QC) limits for chlorodibromomethane and cis-1,3-dichloropropene. LCS recoveries were acceptable. No action was taken on this basis.

MS recovery was less than QC limits for perchlorate. MSD recovery was acceptable. No action was taken on this basis.

Executive Summary

Laboratory Performance: Calibration noncompliance was noted for one VOC. Contaminants were detected in the laboratory method blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-MW-100A-050615			MRC-MW-100B-050615			MRC-MW-100B-050615-DL			MRC-MW-19A-050615		
SDG: 2069284	LAB_ID	2069284003			2069284004			2069284004			2069284005		
FRACTION: OV	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.66	J	P	0.22	U					0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U					0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.45	J	P				0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U					0.26	U	
1,1-DICHLOROETHANE		5.4			25.4						2.1		
1,1-DICHLOROETHENE		3.9			89.6						0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U					0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U					0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U					1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U					0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U					0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U					0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U					0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U					0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U					0.27	U	
1,4-DIOXANE		58.9	UJ	C	60.6	J	CP				58.9	UJ	C
2-BUTANONE		1.8	U		1.8	U					1.8	U	
2-HEXANONE		1.3	U		1.3	U					1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U					1.5	U	
ACETONE		3.1	U		3.1	U					3.1	U	
BENZENE		0.23	U		0.24	J	P				0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U					0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U					0.27	U	
BROMOFORM		0.4	U		0.4	U					0.4	U	
BROMOMETHANE		0.39	U		0.39	U					0.39	U	
CARBON DISULFIDE		0.23	U		0.23	U					0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U					0.31	U	
CHLOROBENZENE		0.19	U		0.19	U					0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U					0.45	U	
CHLOROETHANE		0.33	U		0.33	U					0.33	U	
CHLOROFORM		0.21	U		0.48	J	P				0.51	J	P
CHLOROMETHANE		0.31	U		0.31	U					0.31	U	
CIS-1,2-DICHLOROETHENE		2.3			40.7						0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U					0.31	U	
CYCLOHEXANE		0.29	U		0.29	U					0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-22A-050615			MRC-MW-22B-050615			TB-050615		
SDG: 2069284	LAB_ID	2069284007			2069284006			2069284001		
FRACTION: OV	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		1.6			0.28	U	
1,1-DICHLOROETHENE		0.29	U		5.2			0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	UJ	C	58.9	UJ	C	58.9	UJ	C
2-BUTANONE		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.24	J	P	0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.39	U		0.39	U		0.39	U	
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-100A-050615			MRC-MW-100B-050615			MRC-MW-100B-050615-DL			MRC-MW-19A-050615		
SDG: 2069284	LAB_ID	2069284003			2069284004			2069284004			2069284005		
FRACTION: OV	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U					0.33	U	
ETHYLBENZENE		0.34	U		0.34	U					0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U					0.22	U	
M+P-XYLENES		0.52	U		0.52	U					0.52	U	
METHYL ACETATE		0.32	U		0.32	U					0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U					0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U					0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U					0.45	J	P
O-XYLENE		0.33	U		0.33	U					0.33	U	
STYRENE		0.24	U		0.24	U					0.24	U	
TETRACHLOROETHENE		0.35	U		0.9	J	P				0.35	U	
TOLUENE		0.23	U		0.23	U					0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U					0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U					0.29	U	
TRICHLOROETHENE		13.8						245			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U					0.7	J	P
VINYL CHLORIDE		0.3	U		0.44	J	P				0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-22A-050615			MRC-MW-22B-050615			TB-050615		
SDG: 2069284	LAB_ID	2069284007			2069284006			2069284001		
FRACTION: OV	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		1.8			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-100A-050615			MRC-MW-100B-050615-DL			MRC-MW-19A-050615			MRC-MW-22A-050615		
SDG: 2069284	LAB_ID	2069284003			2069284004			2069284005			2069284007		
FRACTION: OS	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		3.6			69.4			6.6			0.29		

PROJ_NO: 06247	NSAMPLE	MRC-MW-22B-050615		
SDG: 2069284	LAB_ID	2069284006		
FRACTION: OS	SAMP_DATE	5/6/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,4-DIOXANE		7.4		

PROJ_NO: 06247	NSAMPLE	MRC-MW-100B-050615			MRC-MW-19A-050615			MRC-MW-22A-050615			MRC-MW-22B-050615		
SDG: 2069284	LAB_ID	2069284004			2069284005			2069284007			2069284006		
FRACTION: M	SAMP_DATE	5/6/2015			5/6/2015			5/6/2015			5/6/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.001	U		0.001	U		0.001	U		0.001	U	
BARIUM		0.072			0.027			0.04			0.11		
BERYLLIUM		0.00048	J	P	0.0032			0.0003	U		0.0003	U	
CADMIUM		0.00037	U		0.002			0.00037	U		0.00037	U	
CHROMIUM		0.00074	U		0.00093	J	P	0.00078	J	P	0.00074	U	
COBALT		0.053			1.1			0.022			0.11		
COPPER		0.0019	U		0.24			0.0019	U		0.0019	U	
IRON		28.3			0.11			0.29			0.66		
LEAD		0.00074	U		0.00084	J	P	0.00074	U		0.00074	U	
MANGANESE		1.6			3			0.98			2.2		
MOLYBDENUM		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
NICKEL		0.086			1.5			0.047			0.19		
SELENIUM		0.0019	U		0.0042	J	P	0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.0008	J	P	0.0008	J	P	0.00074	U		0.00077	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-01A-050615		
SDG: 2069284	LAB_ID	1513214001		
FRACTION: MISC	SAMP_DATE	5/6/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PERCHLORATE		3.6		

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284001** Date Collected: 5/6/2015 00:00 Matrix: Water

Sample ID: **TB-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 13:52	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 13:52	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 13:52	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 13:52	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 13:52	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 13:52	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 13:52	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 13:52	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 13:52	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 13:52	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 13:52	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 13:52	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 13:52	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 13:52	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 13:52	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 13:52	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 13:52	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 13:52	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 13:52	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 13:52	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 13:52	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 13:52	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 13:52	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 13:52	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 13:52	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 13:52	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 13:52	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 13:52	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 13:52	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 13:52	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 13:52	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 13:52	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 13:52	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 13:52	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 13:52	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 13:52	DD	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284001** Date Collected: 5/6/2015 00:00 Matrix: Water

Sample ID: **TB-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 13:52	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 13:52	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 13:52	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 13:52	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 13:52	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 13:52	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 13:52	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 13:52	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 13:52	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 13:52	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 13:52	DD	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 13:52	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 13:52	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 13:52	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 13:52	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 13:52	DD	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96		%	62 - 133	SW846 8260C			5/15/15 13:52	DD	A
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260C			5/15/15 13:52	DD	A
Dibromofluoromethane (S)	89.6		%	78 - 116	SW846 8260C			5/15/15 13:52	DD	A
Toluene-d8 (S)	104		%	76 - 127	SW846 8260C			5/15/15 13:52	DD	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284002** Date Collected: 5/6/2015 09:30 Matrix: Water

Sample ID: **MRC-MW-01A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 16:03	SUB	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284003** Date Collected: 5/6/2015 11:10 Matrix: Water

Sample ID: **MRC-MW-100A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 14:58	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:58	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:58	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:58	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 14:58	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 14:58	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 14:58	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:58	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:58	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 14:58	DD	A
Chlorodibromomethane	ND	34	ug/L	1.0	0.45	SW846 8260C		5/15/15 14:58	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:58	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 14:58	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:58	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:58	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 14:58	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:58	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 14:58	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 14:58	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:58	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:58	DD	A
1,1-Dichloroethane	5.4		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:58	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:58	DD	A
1,1-Dichloroethene	3.9		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:58	DD	A
cis-1,2-Dichloroethene	2.3		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:58	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:58	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:58	DD	A
cis-1,3-Dichloropropene	ND	12	ug/L	1.0	0.31	SW846 8260C		5/15/15 14:58	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:58	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 14:58	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 14:58	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:58	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 14:58	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 14:58	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 14:58	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 14:58	DD	A

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284003** Date Collected: 5/6/2015 11:10 Matrix: Water

Sample ID: **MRC-MW-100A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 14:58	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 14:58	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 14:58	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 14:58	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 14:58	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 14:58	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 14:58	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 14:58	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 14:58	DD	A
1,1,1-Trichloroethane	0.66J	J	ug/L	1.0	0.22	SW846 8260C			5/15/15 14:58	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 14:58	DD	A
Trichloroethene	13.8		ug/L	1.0	0.33	SW846 8260C			5/15/15 14:58	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 14:58	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 14:58	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 14:58	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 14:58	DD	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.8		%	62 - 133	SW846 8260C			5/15/15 14:58	DD	A
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260C			5/15/15 14:58	DD	A
Dibromofluoromethane (S)	93.1		%	78 - 116	SW846 8260C			5/15/15 14:58	DD	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C			5/15/15 14:58	DD	A

SEMIVOLATILES

1,4-Dioxane	3.6		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 04:20	DHF	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	73.8		%	70 - 130	EPA 522	5/8/15	JEK	5/9/15 04:20	DHF	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284004** Date Collected: 5/6/2015 12:30 Matrix: Water

Sample ID: **MRC-MW-100B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 15:20	DD	A
Benzene	0.24J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 15:20	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:20	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 15:20	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 15:20	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 15:20	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 15:20	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 15:20	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:20	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 15:20	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 15:20	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 15:20	DD	A
Chloroform	0.48J	J	ug/L	1.0	0.21	SW846 8260C		5/15/15 15:20	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:20	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:20	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 15:20	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 15:20	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 15:20	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 15:20	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 15:20	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 15:20	DD	A
1,1-Dichloroethane	25.4		ug/L	1.0	0.28	SW846 8260C		5/15/15 15:20	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:20	DD	A
1,1-Dichloroethene	89.6		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:20	DD	A
cis-1,2-Dichloroethene	40.7		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:20	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 15:20	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 15:20	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:20	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:20	DD	A
1,4-Dioxane	60.6J	J	ug/L	320	58.9	SW846 8260C		5/15/15 15:20	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 15:20	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 15:20	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 15:20	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 15:20	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 15:20	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 15:20	DD	A

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284004** Date Collected: 5/6/2015 12:30 Matrix: Water

Sample ID: **MRC-MW-100B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:20	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 15:20	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 15:20	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 15:20	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 15:20	DD	A
Tetrachloroethene	0.90J	J	ug/L	1.0	0.35	SW846 8260C			5/15/15 15:20	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 15:20	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 15:20	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 15:20	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 15:20	DD	A
1,1,2-Trichloroethane	0.45J	J	ug/L	1.0	0.33	SW846 8260C			5/15/15 15:20	DD	A
Trichloroethene	245		ug/L	5.0	1.7	SW846 8260C			5/20/15 00:19	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 15:20	DD	A
Vinyl Chloride	0.44J	J	ug/L	1.0	0.30	SW846 8260C			5/15/15 15:20	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:20	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 15:20	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	103		%	62 - 133		SW846 8260C			5/20/15 00:19	CJG	B
1,2-Dichloroethane-d4 (S)	96.2		%	62 - 133		SW846 8260C			5/15/15 15:20	DD	A
4-Bromofluorobenzene (S)	111		%	79 - 114		SW846 8260C			5/15/15 15:20	DD	A
4-Bromofluorobenzene (S)	90.1		%	79 - 114		SW846 8260C			5/20/15 00:19	CJG	B
Dibromofluoromethane (S)	93.6		%	78 - 116		SW846 8260C			5/15/15 15:20	DD	A
Dibromofluoromethane (S)	96.3		%	78 - 116		SW846 8260C			5/20/15 00:19	CJG	B
Toluene-d8 (S)	102		%	76 - 127		SW846 8260C			5/15/15 15:20	DD	A
Toluene-d8 (S)	93.8		%	76 - 127		SW846 8260C			5/20/15 00:19	CJG	B
SEMIVOLATILES											
1,4-Dioxane	69.4		ug/L	0.35	0.070	EPA 522	5/8/15	JEK	5/10/15 18:04	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	74.6		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 04:45	DHF	E
1,4-Dioxane-d8 (S)	81.3		%	70 - 130		EPA 522	5/8/15	JEK	5/10/15 18:04	DHF	E
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Barium, Total	0.072		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Beryllium, Total	0.00048J	J	mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284004** Date Collected: 5/6/2015 12:30 Matrix: Water

Sample ID: **MRC-MW-100B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Cobalt, Total	0.053		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Iron, Total	28.3		mg/L	0.067	0.022	SW846 6010C	5/11/15	AAM	5/12/15 09:20	SRT	F1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Manganese, Total	1.6		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/3/15	MNP	6/3/15 13:35	MNP	F
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Nickel, Total	0.086		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2
Vanadium, Total	0.00080J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:32	ZMC	F2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284005** Date Collected: 5/6/2015 10:45 Matrix: Water

Sample ID: **MRC-MW-19A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 15:42	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 15:42	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:42	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 15:42	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 15:42	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 15:42	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 15:42	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 15:42	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:42	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 15:42	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 15:42	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 15:42	DD	A
Chloroform	0.51J	J	ug/L	1.0	0.21	SW846 8260C		5/15/15 15:42	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:42	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:42	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 15:42	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 15:42	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 15:42	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 15:42	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 15:42	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 15:42	DD	A
1,1-Dichloroethane	2.1		ug/L	1.0	0.28	SW846 8260C		5/15/15 15:42	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:42	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:42	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 15:42	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 15:42	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 15:42	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 15:42	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 15:42	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 15:42	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 15:42	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 15:42	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 15:42	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 15:42	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 15:42	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 15:42	DD	A

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284005** Date Collected: 5/6/2015 10:45 Matrix: Water

Sample ID: **MRC-MW-19A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:42	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 15:42	DD	A
Methylene Chloride	0.45J	J	ug/L	1.0	0.45	SW846 8260C			5/15/15 15:42	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 15:42	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 15:42	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 15:42	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 15:42	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 15:42	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 15:42	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 15:42	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:42	DD	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:42	DD	A
Trichlorofluoromethane	0.70J	J	ug/L	1.0	0.24	SW846 8260C			5/15/15 15:42	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 15:42	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 15:42	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 15:42	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.3		%	62 - 133		SW846 8260C			5/15/15 15:42	DD	A
4-Bromofluorobenzene (S)	111		%	79 - 114		SW846 8260C			5/15/15 15:42	DD	A
Dibromofluoromethane (S)	91.4		%	78 - 116		SW846 8260C			5/15/15 15:42	DD	A
Toluene-d8 (S)	103		%	76 - 127		SW846 8260C			5/15/15 15:42	DD	A
SEMIVOLATILES											
1,4-Dioxane	6.6		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 05:11	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	77.7		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 05:11	DHF	E
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Barium, Total	0.027		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Beryllium, Total	0.0032		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Cadmium, Total	0.0020		mg/L	0.0011	0.00037	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Chromium, Total	0.00093J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Cobalt, Total	1.1		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Copper, Total	0.24		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Iron, Total	0.11		mg/L	0.067	0.022	SW846 6010C	5/11/15	AAM	5/12/15 09:23	SRT	G1
Lead, Total	0.00084J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284005** Date Collected: 5/6/2015 10:45 Matrix: Water

Sample ID: **MRC-MW-19A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	3.0		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/3/15	MNP	6/3/15 13:36	MNP	G
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Nickel, Total	1.5		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Selenium, Total	0.0042J	J	mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2
Vanadium, Total	0.00080J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:36	ZMC	G2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284006** Date Collected: 5/6/2015 12:52 Matrix: Water

Sample ID: **MRC-MW-22B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 16:04	DD	A
Benzene	0.24J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 16:04	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:04	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:04	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 16:04	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 16:04	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 16:04	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 16:04	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:04	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 16:04	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 16:04	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:04	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 16:04	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:04	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:04	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 16:04	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:04	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 16:04	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 16:04	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:04	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:04	DD	A
1,1-Dichloroethane	1.6		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:04	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:04	DD	A
1,1-Dichloroethene	5.2		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:04	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:04	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 16:04	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 16:04	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:04	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:04	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 16:04	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 16:04	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 16:04	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 16:04	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 16:04	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 16:04	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 16:04	DD	A

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284006** Date Collected: 5/6/2015 12:52 Matrix: Water

Sample ID: **MRC-MW-22B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:04	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 16:04	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 16:04	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:04	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 16:04	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 16:04	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 16:04	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 16:04	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 16:04	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 16:04	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:04	DD	A
Trichloroethene	1.8		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:04	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:04	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 16:04	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:04	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 16:04	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.3		%	62 - 133		SW846 8260C			5/15/15 16:04	DD	A
4-Bromofluorobenzene (S)	109		%	79 - 114		SW846 8260C			5/15/15 16:04	DD	A
Dibromofluoromethane (S)	92.8		%	78 - 116		SW846 8260C			5/15/15 16:04	DD	A
Toluene-d8 (S)	103		%	76 - 127		SW846 8260C			5/15/15 16:04	DD	A
SEMIVOLATILES											
1,4-Dioxane	7.4		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 05:36	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	74.6		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 05:36	DHF	E
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Barium, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Cobalt, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Iron, Total	0.66		mg/L	0.067	0.022	SW846 6010C	5/11/15	AAM	5/12/15 09:27	SRT	G1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284006** Date Collected: 5/6/2015 12:52 Matrix: Water

Sample ID: **MRC-MW-22B-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	2.2		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/3/15	MNP	6/3/15 13:37	MNP	G
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Nickel, Total	0.19		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2
Vanadium, Total	0.00077J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:47	ZMC	G2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284007** Date Collected: 5/6/2015 15:20 Matrix: Water

Sample ID: **MRC-MW-22A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 16:25	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 16:25	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:25	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:25	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 16:25	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 16:25	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 16:25	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 16:25	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:25	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 16:25	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 16:25	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:25	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 16:25	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:25	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:25	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 16:25	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:25	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 16:25	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 16:25	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:25	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:25	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:25	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:25	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:25	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:25	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 16:25	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 16:25	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:25	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:25	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 16:25	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 16:25	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 16:25	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 16:25	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 16:25	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 16:25	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 16:25	DD	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284007** Date Collected: 5/6/2015 15:20 Matrix: Water

Sample ID: **MRC-MW-22A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:25	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 16:25	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 16:25	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:25	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 16:25	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 16:25	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 16:25	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 16:25	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 16:25	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 16:25	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:25	DD	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:25	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:25	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 16:25	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:25	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 16:25	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.1		%	62 - 133		SW846 8260C			5/15/15 16:25	DD	A
4-Bromofluorobenzene (S)	109		%	79 - 114		SW846 8260C			5/15/15 16:25	DD	A
Dibromofluoromethane (S)	91.8		%	78 - 116		SW846 8260C			5/15/15 16:25	DD	A
Toluene-d8 (S)	103		%	76 - 127		SW846 8260C			5/15/15 16:25	DD	A
SEMIVOLATILES											
1,4-Dioxane	0.29		ug/L	0.070	0.014	EPA 522	5/8/15	JEK	5/9/15 06:02	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	76		%	70 - 130		EPA 522	5/8/15	JEK	5/9/15 06:02	DHF	E
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Barium, Total	0.040		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Chromium, Total	0.00078J	J	mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Cobalt, Total	0.022		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Iron, Total	0.29		mg/L	0.067	0.022	SW846 6010C	5/11/15	AAM	5/12/15 09:31	SRT	G1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2

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ANALYTICAL RESULTS

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID: **2069284007** Date Collected: 5/6/2015 15:20 Matrix: Water

Sample ID: **MRC-MW-22A-050615** Date Received: 5/6/2015 19:15

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	0.98		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/3/15	MNP	6/3/15 13:38	MNP	G
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Nickel, Total	0.047		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/11/15	AAM	5/12/15 01:51	ZMC	G2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1513214
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID:	2069284 002	Sampling Site:	NA	Collected:	05/06/2015
Lab ID:	1513214001	Media:	250 mL Nalgene	Received:	05/12/2015
Matrix:	Water	Sampling Parameter:	NA		

Analysis Method - EPA 6850

Preparation: Not Applicable	**Analysis:** EPA 6850, Water	**Instrument ID:** LCMS04
	Batch: ELMS/1566 (HBN: 148781)	**Percent Solid:** NA
	Analyzed: 05/15/2015 16:03	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**3.6**	0.060	0.20	1	

Comments

Quality Control: EPA 6850 - (HBN: 148781)

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/19/2015 08:05	/S/ Thomas T. McKay 05/20/2015 09:05

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-031

Sample Management

This report contains the results of the analysis of seven (7) water samples collected on May 6, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 6, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

One (1) sample was subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Six (6) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2180033, bromomethane was detected at 0.51J µg/L; carbon disulfide was detected at 0.39J µg/L; 1,4-dichlorobenzene was detected at 0.31J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2178406 and 2178407, was prepared from project sample (2069284003). Results for precision and accuracy were within control limits; except as follows:

- In 2178406 and 2178407, chlorodibromomethane and cis-1,3-dichloropropene were recovered below the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Five (5) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.0009 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on sample, 2069284005, in this deliverable group. The spike recoveries and their associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Four (4) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/9/2015

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1513214

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1566 (148781)

General Set Information: There were nine field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 447081) was less than 1/2 the CRDL. The recovery for the LCS (447082) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1512733001 (Client ID: 2068842 004). The percent recovery for the MS analysis failed QC acceptance criteria. The relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 06MAYP-02/03/07/10/17/20.

Thomas Bosch — May19, 2015
Thomas Bosch — Date

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2069284 TMM031|MRC GW 2015/112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2069284001	TB-050615	Water	5/6/2015 00:00	5/6/2015 19:15	Collected by Client
2069284002	MRC-MW-01A-050615	Water	5/6/2015 09:30	5/6/2015 19:15	Collected by Client
2069284003	MRC-MW-100A-050615	Water	5/6/2015 11:10	5/6/2015 19:15	Collected by Client
2069284004	MRC-MW-100B-050615	Water	5/6/2015 12:30	5/6/2015 19:15	Collected by Client
2069284005	MRC-MW-19A-050615	Water	5/6/2015 10:45	5/6/2015 19:15	Collected by Client
2069284006	MRC-MW-22B-050615	Water	5/6/2015 12:52	5/6/2015 19:15	Collected by Client
2069284007	MRC-MW-22A-050615	Water	5/6/2015 15:20	5/6/2015 19:15	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) P.

2069284

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech, 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-526-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number)

PRESERVATIVE: 1 7 0 2

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP (VOCs (8260C))	GC/MS SVOAs ◦ 8270 ◦ 625 (1-4 dioxane (522))	GC/VOAs ◦ 8021 ◦ 601/602 (Perchlorate (6850))	PESTICIDES ◦ 8081 ◦ 608	PCBs ◦ 8082 ◦ 608	METALS, TOTAL (List in comments below) (6020)	METALS, DISSOLVED (List in comments below)
TB-050615		5/6/15	—	AQ	~~3~~ 5	X						
MRC-MW-01A-050615			0930		1	—		X				
MRC-MW-100A-050615			1110		4	X	X					
MRC-MW-100B-050615			1230		5	X	X				X	—
MRC-MW-19A-050615			1045		6	X	X				X	
MRC-MW-22B-050615			1252		6	X	X				X	
MRC-MW-22A-050615			1520		6	X	X				X	

Cooler Temp: 1 °C
Cooler #:
Therm ID: TT-29
Ship Carrier
FedEx UPS
DHL
Initials
Y N
Custody Seals Present? (if present) Seals Intact?
Received on Ice?
COC/Lbls Complete
Cont in Good Cond?
Correct Containers?
Correct Samp Vol?
Correct Preservation?
Headspace/Volatiles?
Tracking #:

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other

REMARKS/ DATE DESCRIPTION

5/7/15

SPECIAL INSTRUCTIONS/COMMENTS
Metals
* SEE SCOPE FOR FULL METALS LIST
* ALL SAMPLES GO TO MIDDLETOWN, PA LAB

See QAPP ☐

TURNAROUND REQUIREMENTS
___ RUSH (SURCHARGES APPLY)
___ 1 day ___ 2 day ___ 3 day
___ 4 day ___ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
___ I. Results Only
___ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Calibration Summaries
___ IV. Data Validation Report with Raw Data
Edate ___ Yes ___ No

INVOICE INFORMATION
PO #
BILL TO:

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Walt Pryor	Signature: Jerome Williams	Signature: Jerome Williams	Signature: [signature]	Signature: [signature]	Signature: Sam Schmidt
Printed Name: Walt Pryor	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name: Hardcorp	Printed Name: Hardcorp	Printed Name: Sam Schmidt
Firm: TT INC 1620	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5-6-15 / 1645	Date/Time: 5/5/15 1618	Date/Time: 5/5/15	Date/Time: 5/6/15 1700	Date/Time: 5/6 1915	Date/Time: 5/6 1915

Distribution: White - Lab Copy; Yellow - Return to Originator

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13

1513214

14348/1

Analytical Laboratory Services, Inc.
Environmental • Industrial Hygiene • Field Services
34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 1513214 | 1 of 1

ALSI Quote #:

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT [ ] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [X] -Y Debra.Musser@alsglobal.com

Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)
								Enter Number of Containers Per Sample or Field Results Below.
2069284 002	5/6/15	0930	C	GW				X

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?		
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

Subcontract: ALS Salt Lake City

Level IV Package Needed

TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments: Due 5/19/15

Logged By (initials/date/time) _____

Reviewed By (initials/date/time) _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	5/14/15	1530	2 ALS SLC	05/12	09:30
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ] DOD [ ]

State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type- ADR/SEDD

* G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: 2069284	Split:	Workorder ID: 1513214	Level: ENV_LVL4
Client: ALS Environmental		Account: 8001	Type: 250Poly
Comments:			Preservatives

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850	COOL
1	05/06/2015 09:30	2069284 002	1513214001		Water	A	1	A	
2									
3									
4									
5									
6									
7									
8									
9									
10									

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/12/2015 09:33	ALS Sample Receiving	Sample Login
Julie Warath 5/12/15 1110		15B	Storage
R-33-1 5.15.15/13:00		T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-031

Lab File ID: 315051400.D BFB Injection Date: 5/14/2015

Instrument ID: ms03.i BFB Injection Time: 09:42

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.4
75	30.0 - 60.0% of mass 95	47.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.5(0.5) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.2) 1
176	95.0 - 101.0% of mass 174	88.3 (96.7) 1
177	5.0 - 9.0% of mass 176	5.9 (6.7) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	315051403.D	5/14/2015	10:52
1234	1234	315051404.D	5/14/2015	11:14
1235	1235	315051405.D	5/14/2015	11:36
1236	1236	315051406.D	5/14/2015	11:58
1237	1237	315051407.D	5/14/2015	12:20
1238	1238	315051408.D	5/14/2015	12:42
1239	1239	315051409.D	5/14/2015	13:04
2177870(LCS)	2177870	315051413.D	5/14/2015	14:31

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-031

Lab File ID: 315051500.D BFB Injection Date: 5/15/2015

Instrument ID: ms03.i BFB Injection Time: 11:17

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.2
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.6(0.6) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.1) 1
176	95.0 - 101.0% of mass 174	89.3 (97.8) 1
177	5.0 - 9.0% of mass 176	5.6 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	315051501.D	5/15/2015	11:47
2178404(MB)	2178404	315051503.D	5/15/2015	12:46
2178405(LCS)	2178405	315051504.D	5/15/2015	13:08
TB-050615	2069284001	315051506.D	5/15/2015	13:52
MRC-MW-100A-050615	2069284003	315051509.D	5/15/2015	14:58
MRC-MW-100B-050615	2069284004	315051510.D	5/15/2015	15:20
MRC-MW-19A-050615	2069284005	315051511.D	5/15/2015	15:42
MRC-MW-22B-050615	2069284006	315051512.D	5/15/2015	16:04
MRC-MW-22A-050615	2069284007	315051513.D	5/15/2015	16:25
MRC-MW-100A-0...MS	2178406	315051525.D	5/15/2015	20:48
MRC-MW-100A-...MSD	2178407	315051526.D	5/15/2015	21:09

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-031

Lab File ID: 15051950.D BFB Injection Date: 5/19/2015

Instrument ID: ms15.i BFB Injection Time: 17:56

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	48.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	92.7
175	5.0 - 9.0% of mass 174	6.6 (7.1) 1
176	95.0 - 101.0% of mass 174	88.4 (95.3) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15051953.D	5/19/2015	18:52
1234	1234	15051954.D	5/19/2015	19:10
1235	1235	15051955.D	5/19/2015	19:27
1236	1236	15051956.D	5/19/2015	19:44
1237	1237	15051957.D	5/19/2015	20:01
1238	1238	15051958.D	5/19/2015	20:18
1239	1239	15051959.D	5/19/2015	20:35
2180033(MB)	2180033	15051963.D	5/19/2015	21:44
2180034(LCS)	2180034	15051964.D	5/19/2015	22:01
MRC-MW-100B-050615-DL5	2069284004	15051972.D	5/20/2015	00:19

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3645	18882	69233	190333	414365	L
Acrolein	0.02564	0.02735	0.02734	0.02954	0.03083	A
Acrylonitrile	0.05340	0.05544	0.05621	0.05960	0.06149	A
Acetonitrile	0.02110	0.01947	0.01689	0.01738	0.01793	A
tert-Amyl Ethylether	12773	74622	326547	965729	2212322	L
tert-Amyl methyl ether	15291	93569	412141	1177326	2631483	L
tert-Amyl Alcohol	1731	10993	47672	150815	346185	Q
Benzene	0.76184	0.79039	0.77045	0.76998	0.79886	A
Benzyl Chloride	398	4029	25868	115250	319198	Q
Bromobenzene	0.61313	0.62139	0.63881	0.66498	0.68157	A
Bromochloromethane	0.09153	0.10275	0.10066	0.10047	0.10372	A
Bromodichloromethane	6212	38217	183949	544640	1251758	L
Bromoform *	1633	11986	65084	227734	569801	Q
Bromomethane	9797	35319	121725	303696	661317	L
2-Butanone	0.02188	0.02073	0.02254	0.02390	0.02425	A
tert.- Butyl Alcohol	0.01396	0.01443	0.01274	0.01412	0.01546	A
tert-Butylbenzene	0.40310	0.43700	0.49748	0.51264	0.53893	A
n-Butylbenzene	3745	25771	150608	433957	1014121	L
sec-Butylbenzene	21057	151642	784728	2179564	4811365	L
Carbon Disulfide	14541	77503	357638	1060387	2543667	Q
Carbon Tetrachloride	5270	33342	166478	481308	1145041	L
Chloroacetonitrile	368	4020	18821	57347	127671	L
Chlorobenzene *	1.54161	1.54722	1.52836	1.53129	1.60381	A
1-Chlorobutane	0.17164	0.16281	0.16243	0.15609	0.16362	A
Chlorodibromomethane	3701	25731	136746	424770	984536	Q
Chloroethane	0.18207	0.19051	0.18344	0.16664	0.16174	A
2-Chloroethylvinyl ether	611	5690	32062	144865	381297	Q
Chloroform **	24606	87202	326545	860343	1880332	L
1-Chlorohexane	8507	51493	253696	722169	1684157	L
Chloromethane *	0.20194	0.19734	0.18999	0.17860	0.18833	A
Chloroprene	0.19613	0.22764	0.23294	0.23179	0.24830	A
3-Chloro-1-propene	0.16378	0.16533	0.17166	0.17033	0.17347	A
o-Chlorotoluene	1.49598	1.70792	1.81564	1.88697	1.94044	A
p-Chlorotoluene	1.39042	1.59241	1.69153	1.76492	1.80063	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.25075	0.27800	0.30081	0.29970	0.32467	A
1,2-Dibromo-3-Chloropropane	385	3034	15296	54465	132631	Q
1,2-Dibromoethane	5575	32597	150192	423436	930198	L
Dibromomethane	0.09985	0.10226	0.10619	0.10600	0.11147	A
trans-1,4-Dichloro-2-butene	784	5040	25757	88665	210562	Q
1,2-Dichlorobenzene	0.90561	0.97571	0.98840	1.03109	1.05534	A
1,3-Dichlorobenzene	1.05126	1.08789	1.09471	1.13564	1.16977	A
1,4-Dichlorobenzene	1.13796	1.13643	1.11935	1.15355	1.18665	A
Dichlorodifluoromethane	0.25489	0.27952	0.25910	0.24307	0.24970	A
1,1-Dichloroethane *	0.30670	0.31352	0.31982	0.31204	0.33012	A
1,2-Dichloroethene, Total	0.22496	0.23166	0.22844	0.22514	0.23635	A
1,2-Dichloroethane	0.22908	0.23384	0.22768	0.22277	0.22222	A
1,1-Dichloroethene **	0.23646	0.25009	0.23528	0.22471	0.24125	A
cis-1,2-Dichloroethene	0.22617	0.23284	0.22856	0.22506	0.23738	A
trans-1,2-Dichloroethene	0.22375	0.23047	0.22832	0.22522	0.23532	A
Dichlorofluoromethane	0.46454	0.42602	0.40182	0.36431	0.35661	A
1,1-Dichloro-2-Propanone	266	2264	11453	41104	96731	Q
2,2-Dichloropropane	0.20384	0.21077	0.22160	0.22566	0.24050	A
1,3-Dichloropropane	0.72192	0.76367	0.75853	0.77252	0.78876	A
1,2-Dichloropropane **	0.18984	0.17872	0.18410	0.18580	0.19327	A
1,1-Dichloropropene	0.22908	0.25939	0.26386	0.25801	0.27510	A
cis-1,3-Dichloropropene	6438	44404	230574	700770	1637638	Q
trans-1,3-Dichloropropene	4993	38666	203324	621214	1432395	Q
1,3-Dichloropropene, Total	11431	83070	433898	1321984	3070033	L
Diisobutylene	51783	113435	422759	1122643	2590079	L
Diisopropyl ether	0.41805	0.45278	0.48355	0.48790	0.52575	A
1,4-Dioxane	1818	11355	50492	143123	312920	L
Ethyl Acetate	0.13117	0.12113	0.13167	0.13852	0.14280	A
Ethyl ether	0.13501	0.14910	0.11764	0.11433	0.12530	A
Ethyl Methacrylate	6140	41782	204578	629726	1410865	Q
Ethyl tert-butyl ether	0.42585	0.45730	0.48034	0.50338	0.53871	A
Ethylbenzene **	0.71457	0.78204	0.81960	0.83836	0.88544	A
Freon 113	0.16542	0.16877	0.17109	0.16304	0.17347	A
Heptane	3382	20697	120263	306543	761774	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	2369	11892	68493	191107	440630	Q
Hexachloroethane	1616	10839	63591	213573	549211	Q
Hexane	0.26749	0.27860	0.32395	0.30572	0.33465	A
2-Hexanone	14676	93581	461292	1358303	2931600	L
Iodomethane	1350	9861	67898	205634	472384	Q
Isobutyl alcohol	2929	11125	57350	183575	407548	Q
Isopropyl Alcohol	0.01012	0.00787	0.00819	0.00866	0.00920	A
Isopropylbenzene	1.89417	2.26300	2.48812	2.59506	2.70319	A
p-Isopropyltoluene	4434	33110	177645	518799	1175390	L
Methyl acetate	0.02751	0.03057	0.02879	0.02980	0.03191	A
Methyl acrylate	5331	29375	128722	371931	853542	L
Methacrylonitrile	2806	16067	66755	193112	425978	L
Methyl cyclohexane	0.69369	0.74546	0.85028	0.87509	0.96665	A
Methyl methacrylate	4409	23243	107116	321640	726532	L
Methyl t-Butyl Ether	0.46602	0.44697	0.45706	0.46668	0.49048	A
4-Methyl-2-Pentanone(MIBK)	23112	146483	690905	2015657	4339252	L
Methylene Chloride	21868	59839	193670	483204	1080199	Q
Naphthalene	2242	29060	186395	760357	1844284	Q
Nitrobenzene	70.00000	2325	15240	77907	291154	Q
2-Nitropropane	3300	19876	115502	398010	922192	Q
Octane	2289	12648	87626	247160	570715	L
Pentachloroethane	645	4388	22149	61549	138320	L
Pentane	0.14174	0.13206	0.13520	0.12112	0.11977	A
n-Propanol	0.01199	0.01023	0.00961	0.00934	0.00943	A
Propionitrile	0.02051	0.02421	0.02300	0.02426	0.02492	A
n-Propylbenzene	6800	45499	233250	661747	1491141	L
Styrene	14661	105027	513755	1490129	3338505	L
1,1,1,2-Tetrachloroethane	5027	33386	159187	462204	1038673	L
1,1,2,2-Tetrachloroethane *	0.46440	0.51384	0.52231	0.55596	0.56294	A
Tetrachloroethene	0.56687	0.56909	0.54267	0.54287	0.57246	A
Tetrahydrofuran	0.04120	0.04226	0.04110	0.04436	0.04602	A
Toluene **	1.20153	1.26325	1.30673	1.33623	1.39657	A
Total Xylenes	0.78815	0.87556	0.95264	0.98620	1.04162	A
1,2,3-Trichlorobenzene	1735	16474	83143	273212	624153	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	2962	25224	131764	410630	960017	L
1,1,1-Trichloroethane	0.23095	0.24671	0.26944	0.26003	0.28252	A
1,1,2-Trichloroethane	0.38051	0.35869	0.36844	0.36947	0.38451	A
Trichloroethene	0.20763	0.20252	0.19883	0.20524	0.21543	A
Trichlorofluoromethane	0.35579	0.41219	0.39182	0.35758	0.35889	A
1,2,3-Trichloropropane	0.19182	0.17917	0.17938	0.18802	0.18678	A
1,2,4-Trimethylbenzene	16774	124847	621316	1759331	3842840	L
1,3,5-Trimethylbenzene	17763	126584	634122	1774661	3909923	L
Vinyl Acetate	607	6004	28448	95481	229728	Q
Vinyl Chloride **	0.25270	0.27931	0.26717	0.24977	0.25259	A
o-Xylene	12184	67368	324353	916999	2060128	L
mp-Xylene	0.79919	0.91357	0.97775	1.00588	1.05877	A
4-Bromofluorobenzene	7218	41921	197765	546930	1238831	L
Dibromofluoromethane	0.14487	0.16405	0.17407	0.17669	0.18637	A
1,2-Dichloroethane-d4	0.17441	0.18564	0.18090	0.18022	0.18452	A
Toluene-d8	1.63574	1.80848	1.88881	1.91234	2.02297	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	832273	2135		L	0.000000	68.526894		0.99939
Acrolein	0.03008	0.02110		A		0.027410		12.13419
Acrylonitrile	0.05878	0.04770		A		0.056090		8.19667
Acetonitrile	0.01709	0.02298		A		0.018980		12.22888
tert-Amyl Ethylether	4815720	5256		L	0.000000	2.423480		0.99874
tert-Amyl methyl ether	5674688	6631		L	0.000000	2.049050		0.99940
tert-Amyl Alcohol	719667	755		Q	0.000000	0.012100	0.000010	0.99944
Benzene	0.79415	0.71082		A		0.770930		3.88947
Benzyl Chloride	770897	73.00000		Q	0.000000	0.123380	0.010840	0.99849
Bromobenzene	0.69090	0.51353		A		0.632050		9.48509
Bromochloromethane	0.10871	0.09087		A		0.099820		6.50519
Bromodichloromethane	2746119	2698		L	0.000000	4.258560		0.99843
Bromoform *	1281742	523		Q	0.000000	0.253540	0.010710	0.99916
Bromomethane	1345361	4832		L	0.000000	8.498350		0.99945
2-Butanone	0.02364	0.01779		A		0.022100		10.27919
tert.- Butyl Alcohol	0.01504	0.01183		A		0.013940		9.10400
tert-Butylbenzene	0.54964	0.40799		A		0.478110		12.84093
n-Butylbenzene	2179112	2094		L	0.000000	1.839270		0.99852
sec-Butylbenzene	9788039	11241		L	0.000000	0.402810		0.99979
Carbon Disulfide	5617948	6837		Q	0.000000	0.416880	0.010740	0.99958
Carbon Tetrachloride	2508398	2320		L	0.000000	4.667720		0.99791
Chloroacetonitrile	252121	201		L	0.000000	83.069862		0.99925
Chlorobenzene *	1.61662	1.44241		A		1.544470		3.69986
1-Chlorobutane	0.16385	0.17237		A		0.164690		3.43285
Chlorodibromomethane	2160848	1297		Q	0.000000	0.430370	0.012440	0.99974
Chloroethane	0.14200	0.20908		A		0.176500		12.33135
2-Chloroethylvinyl ether	834309	302		Q	0.000000	0.058300	0.002170	0.99748
Chloroform **	3990408	17372		L	0.000000	2.897240		0.99987
1-Chlorohexane	3567236	4536		L	0.000000	1.196610		0.99856
Chloromethane *	0.18878	0.22323		A		0.195460		7.31413
Chloroprene	0.25687	0.20278		A		0.228070		9.70049
3-Chloro-1-propene	0.16420	0.13452		A		0.163330		8.12301
o-Chlorotoluene	1.92633	1.56343		A		1.762390		10.10926
p-Chlorotoluene	1.77229	1.25616		A		1.609770		13.10560
Cyclohexane	0.33449	0.27531		A		0.294820		9.91755
1,2-Dibromo-3-Chloropropane	289761			Q	0.000000	0.061330	0.001820	0.99906

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	1938095	2221		L	0.000000	2.187030		0.99971
Dibromomethane	0.11043	0.09335		A		0.104220		6.06142
trans-1,4-Dichloro-2-butene	444482	151		Q	0.000000	0.101630	0.001660	0.99912
1,2-Dichlorobenzene	1.06681	0.89444		A		0.988200		6.94931
1,3-Dichlorobenzene	1.17834	0.97480		A		1.098910		6.48705
1,4-Dichlorobenzene	1.21523	1.10904		A		1.151170		3.27878
Dichlorodifluoromethane	0.24727	0.26945		A		0.257570		5.03878
1,1-Dichloroethane *	0.33379	0.28283		A		0.314120		5.38072
1,2-Dichloroethene, Total	0.24096	0.22242		A		0.229990		2.92789
1,2-Dichloroethane	0.21891	0.21341		A		0.223990		3.04346
1,1-Dichloroethene **	0.25057	0.22571		A		0.237720		4.38379
cis-1,2-Dichloroethene	0.24112	0.24544		A		0.233800		3.33514
trans-1,2-Dichloroethene	0.24080	0.19940		A		0.226180		5.83269
Dichlorofluoromethane	0.33477	0.38956		A		0.391090		11.34380
1,1-Dichloro-2-Propanone	200765			Q	-0.004690	0.009320	0.000010	0.99910
2,2-Dichloropropane	0.24627	0.19435		A		0.220430		8.58392
1,3-Dichloropropane	0.78366	0.62698		A		0.745150		7.58382
1,2-Dichloropropane **	0.19657	0.16714		A		0.185060		5.33784
1,1-Dichloropropene	0.28109	0.22463		A		0.255880		8.41311
cis-1,3-Dichloropropene	3573920	2663		Q	0.000000	0.717410	0.019750	0.99971
trans-1,3-Dichloropropene	3057632	2184		Q	0.000000	0.643050	0.012520	0.99967
1,3-Dichloropropene, Total	6631552	4847		L	0.000000	1.293600		0.99773
Diisobutylene	5495046	45414		L	0.000000	2.109840		0.99928
Diisopropyl ether	0.52850	0.36929		A		0.466550		12.40276
1,4-Dioxane	629652	786		L	0.000000	453		0.99945
Ethyl Acetate	0.14280	0.10731		A		0.130770		9.84097
Ethyl ether	0.13124	0.10524		A		0.125410		11.63488
Ethyl Methacrylate	2948531	2569		Q	0.000000	0.653510	0.007040	0.99972
Ethyl tert-butyl ether	0.54780	0.36780		A		0.474450		13.44419
Ethylbenzene **	0.90567	0.73274		A		0.811200		8.94452
Freon 113	0.17948	0.17264		A		0.170560		3.20025
Heptane	1619383	1762		Q	-0.005110	0.131410	0.001530	0.99913
Hexachlorobutadiene	926129	1676		Q	-0.007130	0.225200	0.001530	0.99974
Hexachloroethane	1285737	735		Q	0.000000	0.232680	0.013970	0.99934
Hexane	0.33938	0.25071		A		0.300070		11.62573
2-Hexanone	5735228	5651		L	0.000000	3.636180		0.99918

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1031133	985		Q	0.000000	0.079700	0.001490	0.99973
Isobutyl alcohol	880621	1141		Q	0.000000	0.007040	0.000000	0.99975
Isopropyl Alcohol	0.00887	0.01036		A		0.009040		10.30113
Isopropylbenzene	2.62023	2.01212		A		2.367980		13.40043
p-Isopropyltoluene	2518453	1896		L	0.000000	1.588020		0.99905
Methyl acetate	0.03103	0.03248		A		0.030300		5.76385
Methyl acrylate	1770587	2071		L	0.000000	6.515500		0.99949
Methacrylonitrile	875445	970		L	0.000000	13.119880		0.99976
Methyl cyclohexane	1.01234	0.71229		A		0.836540		14.93427
Methyl methacrylate	1490680	1619		L	0.000000	7.714070		0.99950
Methyl t-Butyl Ether	0.49727	0.42312		A		0.463940		5.44471
4-Methyl-2-Pentanone(MIBK)	8332224	9246		L	0.000000	2.490420		0.99855
Methylene Chloride	2310548	15655		Q	0.000000	0.192120	0.001260	0.99979
Naphthalene	3880317	701		Q	0.000000	0.872360	0.016860	0.99834
Nitrobenzene	899982			Q	-0.014560	0.007170	0.000240	0.99914
2-Nitropropane	1878315	1212		Q	0.000000	0.084770	0.000140	0.99902
Octane	1205408	1052		L	0.000000	3.537270		0.99871
Pentachloroethane	294903	215		L	0.000000	13.535010		0.99941
Pentane	0.11131	0.13691		A		0.128300		8.59391
n-Propanol	0.00919	0.00864		A		0.009780		11.13236
Propionitrile	0.02406	0.02022		A		0.023030		8.27725
n-Propylbenzene	3151005	3478		L	0.000000	1.264430		0.99949
Styrene	6912822	6733		L	0.000000	0.573440		0.99969
1,1,1,2-Tetrachloroethane	2199347	2286		L	0.000000	1.937380		0.99909
1,1,2,2-Tetrachloroethane *	0.54616	0.39349		A		0.508450		11.91623
Tetrachloroethene	0.59912	0.63371		A		0.575260		5.59395
Tetrahydrofuran	0.04424	0.03361		A		0.041830		9.68766
Toluene **	1.42055	1.16378		A		1.298380		7.36076
Total Xylenes	1.05536	0.75752		A		0.922430		12.84838
1,2,3-Trichlorobenzene	1285783	704		L	0.000000	3.084920		0.99905
1,2,4-Trichlorobenzene	2053646	1279		L	0.000000	1.950550		0.99836
1,1,1-Trichloroethane	0.28972	0.20043		A		0.254260		12.24638
1,1,2-Trichloroethane	0.38821	0.26778		A		0.359660		11.62243
Trichloroethene	0.22284	0.27797		A		0.218640		12.52648
Trichlorofluoromethane	0.34830	0.41862		A		0.377600		7.77085
1,2,3-Trichloropropane	0.18098	0.13526		A		0.177350		10.80763

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	7920871	8401		L	0.000000	0.499150		0.99989
1,3,5-Trimethylbenzene	8069300	8829		L	0.000000	0.490300		0.99987
Vinyl Acetate	512550	109		Q	0.000000	0.036890	0.001150	0.99942
Vinyl Chloride **	0.24305	0.28472		A		0.261330		6.09742
o-Xylene	4343040	5363		L	0.000000	0.979880		0.99926
mp-Xylene	1.06816	0.80184		A		0.946450		11.86152
4-Bromofluorobenzene	2575228	3455		L	0.000000	1.541110		0.99969
Dibromofluoromethane	0.18672	0.12421		A		0.165280		14.01022
1,2-Dichloroethane-d4	0.18059	0.17710		A		0.180480		2.16351
Toluene-d8	2.01020	1.50913		A		1.826810		10.50663

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		216		-13.7	100.0	L
Acrolein	0.0274	0.0256			-6.6	100.0	A
Acrylonitrile	0.0561	0.0529			-5.8	100.0	A
Acetonitrile	0.0190	0.0186			-2.2	100.0	A
tert-Amyl Ethylether	50.0000		47.7755		-4.4	100.0	L
tert-Amyl methyl ether	50.0000		46.9220		-6.2	100.0	L
tert-Amyl Alcohol	250		178		-28.8	100.0	L
Benzene	0.7709	0.7784			1.0	100.0	A
Benzyl Chloride	50.0000		47.1823		-5.6	100.0	Q
Bromobenzene	0.6320	0.6501			2.9	100.0	A
Bromochloromethane	0.0998	0.1018			2.0	100.0	A
Bromodichloromethane	50.0000		45.3569		-9.3	100.0	L
Bromoform	50.0000		43.8300	0.100	-12.3	100.0	Q
Bromomethane	50.0000		46.5487		-6.9	100.0	L
2-Butanone	0.0221	0.0202			-8.9	100.0	A
tert.- Butyl Alcohol	0.0139	0.0104			-25.4	100.0	A
tert-Butylbenzene	0.4781	0.4852			1.5	100.0	A
n-Butylbenzene	50.0000		41.1425		-17.7	100.0	L
sec-Butylbenzene	50.0000		45.5705		-8.9	100.0	L
Carbon Disulfide	50.0000		43.4019		-13.2	100.0	L
Carbon Tetrachloride	50.0000		45.3119		-9.4	100.0	L
Chloroacetonitrile	250		201		-19.4	100.0	L
Chlorobenzene	1.5445	1.4958		0.300	-3.2	100.0	A
1-Chlorobutane	0.1647	0.1568			-4.8	100.0	A
Chlorodibromomethane	50.0000		41.7828		-16.4	100.0	L
Chloroethane	0.1765	0.1542			-12.6	100.0	A
2-Chloroethylvinyl ether	50.0000		76.2814		52.6	100.0	Q
Chloroform	50.0000		48.3109		-3.4	20.0	L
1-Chlorohexane	50.0000		42.3941		-15.2	100.0	L
Chloromethane	0.1955	0.1756		0.100	-10.2	100.0	A
Chloroprene	0.2281	0.2355			3.3	100.0	A
3-Chloro-1-propene	0.1633	0.1716			5.1	100.0	A
o-Chlorotoluene	1.7624	1.8116			2.8	100.0	A
p-Chlorotoluene	1.6098	1.7083			6.1	100.0	A
Cyclohexane	0.2948	0.2842			-3.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.6357		-16.7	100.0	Q
1,2-Dibromoethane	50.0000		46.1451		-7.7	100.0	L
Dibromomethane	0.1042	0.1034			-0.8	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		45.4274		-9.1	100.0	L
1,2-Dichlorobenzene	0.9882	0.9840			-0.4	100.0	A
1,3-Dichlorobenzene	1.0989	1.0809			-1.6	100.0	A
1,4-Dichlorobenzene	1.1512	1.1069			-3.8	100.0	A
Dichlorodifluoromethane	0.2576	0.2289			-11.1	100.0	A
1,1-Dichloroethane	0.3141	0.3178		0.100	1.2	100.0	A
1,2-Dichloroethene, Total	0.2300	0.2291			-0.4	100.0	A
1,2-Dichloroethane	0.2240	0.2185			-2.4	100.0	A
1,1-Dichloroethene	0.2377	0.2311			-2.8	20.0	A
cis-1,2-Dichloroethene	0.2338	0.2282			-2.4	100.0	A
trans-1,2-Dichloroethene	0.2262	0.2300			1.7	100.0	A
Dichlorofluoromethane	0.3911	0.3473			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		200		-20.0	100.0	Q
2,2-Dichloropropane	0.2204	0.2232			1.2	100.0	A
1,3-Dichloropropane	0.7452	0.7474			0.3	100.0	A
1,2-Dichloropropane	0.1851	0.1877			1.4	20.0	A
1,1-Dichloropropene	0.2559	0.2575			0.6	100.0	A
cis-1,3-Dichloropropene	50.0000		44.2645		-11.5	100.0	L
trans-1,3-Dichloropropene	50.0000		45.7992		-8.4	100.0	L
1,3-Dichloropropene, Total	100		90.0637		-9.9	100.0	L
Diisobutylene	50.0000		42.6611		-14.7	100.0	L
Diisopropyl ether	0.4665	0.5092			9.1	100.0	A
1,4-Dioxane	1250		571		-54.3	100.0	L
Ethyl Acetate	0.1308	0.1255			-4.1	100.0	A
Ethyl ether	0.1254	0.1206			-3.8	100.0	A
Ethyl Methacrylate	50.0000		44.7337		-10.5	100.0	L
Ethyl tert-butyl ether	0.4744	0.5112			7.7	100.0	A
Ethylbenzene	0.8112	0.7997			-1.4	20.0	A
Freon 113	0.1706	0.1592			-6.7	100.0	A
Heptane	50.0000		39.9487		-20.1	100.0	Q
Hexachlorobutadiene	50.0000		42.2464		-15.5	100.0	Q
Hexachloroethane	50.0000		46.2337		-7.5	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3001	0.2993			-0.3	100.0	A
2-Hexanone	250		223		-10.8	100.0	L
Iodomethane	50.0000		41.4150		-17.2	100.0	Q
Isobutyl alcohol	500		324		-35.2	100.0	L
Isopropyl Alcohol	0.0090	0.0058			-36.1	100.0	A
Isopropylbenzene	2.3680	2.4749			4.5	100.0	A
p-Isopropyltoluene	50.0000		42.7350		-14.5	100.0	L
Methyl acetate	0.0303	0.0273			-9.8	100.0	A
Methyl acrylate	50.0000		44.0285		-11.9	100.0	L
Methacrylonitrile	50.0000		45.2531		-9.5	100.0	L
Methyl cyclohexane	0.8365	0.7992			-4.5	100.0	A
Methyl methacrylate	50.0000		46.0941		-7.8	100.0	L
Methyl t-Butyl Ether	0.4639	0.4661			0.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		232		-7.3	100.0	L
Methylene Chloride	50.0000		52.5174		5.0	100.0	Q
Naphthalene	50.0000		41.2501		-17.5	100.0	L
Nitrobenzene	500		319		-36.3	100.0	Q
2-Nitropropane	250		208		-16.9	100.0	L
Octane	50.0000		34.9468		-30.1	100.0	L
Pentachloroethane	50.0000		45.8760		-8.2	100.0	L
Pentane	0.1283	0.1098			-14.4	100.0	A
n-Propanol	0.0098	0.0091			-6.7	100.0	A
Propionitrile	0.0230	0.0207			-10.3	100.0	A
n-Propylbenzene	50.0000		44.9955		-10.0	100.0	L
Styrene	50.0000		47.4760		-5.0	100.0	L
1,1,1,2-Tetrachloroethane	50.0000		44.6131		-10.8	100.0	L
1,1,2,2-Tetrachloroethane	0.5084	0.5168		0.300	1.6	100.0	A
Tetrachloroethene	0.5753	0.4932			-14.3	100.0	A
Tetrahydrofuran	0.0418	0.0384			-8.2	100.0	A
Toluene	1.2984	1.3164			1.4	20.0	A
Total Xylenes	0.9224	0.9453			2.5	100.0	A
1,2,3-Trichlorobenzene	50.0000		45.6967		-8.6	100.0	L
1,2,4-Trichlorobenzene	50.0000		41.7318		-16.5	100.0	L
1,1,1-Trichloroethane	0.2543	0.2604			2.4	100.0	A
1,1,2-Trichloroethane	0.3597	0.3614			0.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-031

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2186	0.2002			-8.4	100.0	A
Trichlorofluoromethane	0.3776	0.3305			-12.5	100.0	A
1,2,3-Trichloropropane	0.1773	0.1714			-3.3	100.0	A
1,2,4-Trimethylbenzene	50.0000		46.8249		-6.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0915		-7.8	100.0	L
Vinyl Acetate	50.0000		50.5007		1.0	100.0	Q
Vinyl Chloride	0.2613	0.2290			-12.4	20.0	A
o-Xylene	50.0000		44.7407		-10.5	100.0	L
mp-Xylene	0.9464	0.9613			1.6	100.0	A
4-Bromofluorobenzene	50.0000		50.5263		1.1	100.0	L
Dibromofluoromethane	0.1653	0.1608			-2.7	100.0	A
1,2-Dichloroethane-d4	0.1805	0.1615			-10.5	100.0	A
Toluene-d8	1.8268	1.8124			-0.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2178404

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-031

Lab File ID: 315051503.D Lab Sample ID: 2178404

Date Analyzed: 5/15/2015 Time Analyzed: 12:46

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms03.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2178405(LCS)	2178405	315051504.D	13:08
TB-050615	2069284001	315051506.D	13:52
MRC-MW-100A-050615	2069284003	315051509.D	14:58
MRC-MW-100B-050615	2069284004	315051510.D	15:20
MRC-MW-19A-050615	2069284005	315051511.D	15:42
MRC-MW-22B-050615	2069284006	315051512.D	16:04
MRC-MW-22A-050615	2069284007	315051513.D	16:25
MRC-MW-100A-0...MS	2178406	315051525.D	20:48
MRC-MW-100A-...MSD	2178407	315051526.D	21:09

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2178404(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Matrix (soil/water): WATER Lab Sample ID: 2178404

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 315051503.D

Level (low/med): Date Received: 5/15/15

% Moisture: not dec. 100.0 Date Analyzed: 5/15/15

GC Column: RTXVRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2180033

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-031

Lab File ID: 15051963.D Lab Sample ID: 2180033

Date Analyzed: 5/19/2015 Time Analyzed: 21:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2180034(LCS)	2180034	15051964.D	22:01
MRC-MW-100B-050615-DL	2069284004	15051972.D	00:19

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.51	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.39	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.31	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-031

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2180033(MB)	92.7	91.2	94.4	95.0	0
02	2180034(LCS)	89.0	85.1	86.2	87.6	0
03	MRC-MW-100B-050615-DL5	90.1	96.3	103	93.8	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-031

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
04	2177870(LCS)	108	98.6	98.3	101	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(85-114)
SMC2 (DBFM) = Dibromofluoromethane	(80-119)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(81-118)
SMC4 (TOL) = Toluene-d8	(89-112)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-031

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
05	2178404(MB)	109	90.6	95.1	101	0
06	2178405(LCS)	107	95.8	94.2	99.6	0
07	TB-050615	110	89.6	96.0	104	0
08	MRC-MW-100A-050615	109	93.1	95.8	102	0
09	MRC-MW-100B-050615	111	93.6	96.2	102	0
10	MRC-MW-19A-050615	111	91.4	95.3	103	0
11	MRC-MW-22B-050615	109	92.8	97.3	103	0
12	MRC-MW-22A-050615	109	91.8	99.1	103	0
13	MRC-MW-100A-0...MS	108	95.4	94.5	97.8	0
14	MRC-MW-100A-...MSD	109	98.6	96.1	100	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2177870

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		87.7	87.7	(39-160)
Benzene	20.0		19.3	96.7	(79-120)
Bromochloromethane	20.0		19.2	95.8	(78-123)
Bromodichloromethane	20.0		16.6	83	(79-125)
Bromoform	20.0		16.3	81.4	(66-130)
Bromomethane	20.0		23.2	116	(53-141)
2-Butanone	100		95.8	95.8	(56-143)
Carbon Disulfide	20.0		13.0	65	(64-133)
Carbon Tetrachloride	20.0		16.8	84.1	(72-136)
Chlorobenzene	20.0		19.9	99.5	(82-118)
Chlorodibromomethane	20.0		17.6	87.8	(74-126)
Chloroethane	20.0		14.3	71.5	(60-138)
Chloroform	20.0		19.7	98.4	(79-124)
Chloromethane	20.0		18.1	90.4	(50-139)
Cyclohexane	20.0		19.4	97	(71-130)
1,2-Dibromo-3-Chloropro	20.0		16.4	81.9	(62-128)
1,2-Dibromoethane	20.0		18.1	90.4	(77-121)
1,2-Dichlorobenzene	20.0		21.1	105	(80-119)
1,3-Dichlorobenzene	20.0		21.3	106	(80-119)
1,4-Dichlorobenzene	20.0		20.6	103	(79-118)
Dichlorodifluoromethane	20.0		14.9	74.4	(32-152)
1,1-Dichloroethane	20.0		19.1	95.6	(77-125)
1,2-Dichloroethane	20.0		19.0	94.9	(73-128)
1,1-Dichloroethene	20.0		17.8	89.2	(71-131)
cis-1,2-Dichloroethene	20.0		18.9	94.6	(78-123)
trans-1,2-Dichloroethen	20.0		19.2	96	(75-124)
1,2-Dichloropropane	20.0		20.0	99.9	(78-122)
cis-1,3-Dichloropropene	20.0		18.0	90.1	(75-124)
trans-1,3-Dichloroprope	20.0		19.0	95.1	(73-127)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2177870

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		403	80.7	(59-139)
Ethylbenzene	20.0		20.7	103	(79-121)
Freon 113	20.0		18.7	93.6	(70-136)
2-Hexanone	100		87.3	87.3	(57-139)
Isopropylbenzene	20.0		23.1	115	(72-131)
Methyl acetate	20.0		19.1	95.5	(56-136)
Methyl cyclohexane	20.0		20.3	102	(72-132)
Methyl t-Butyl Ether	20.0		19.0	94.8	(71-124)
4-Methyl-2-Pentanone(MI	100		90.5	90.5	(67-130)
Methylene Chloride	20.0		21.3	107	(74-124)
Styrene	20.0		19.3	96.5	(78-123)
1,1,2,2-Tetrachloroetha	20.0		21.3	107	(71-121)
Tetrachloroethene	20.0		18.9	94.4	(74-129)
Toluene	20.0		20.4	102	(80-121)
1,2,3-Trichlorobenzene	20.0		16.8	84.1	(69-129)
1,2,4-Trichlorobenzene	20.0		16.8	84.1	(69-130)
1,1,1-Trichloroethane	20.0		20.2	101	(74-131)
1,1,2-Trichloroethane	20.0		20.2	101	(80-119)
Trichloroethene	20.0		18.5	92.6	(79-123)
Trichlorofluoromethane	20.0		17.9	89.4	(65-141)
Vinyl Chloride	20.0		18.1	90.5	(58-137)
o-Xylene	20.0		18.2	91.1	(78-122)
mp-Xylene	40.0		42.5	106	(80-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		90.1	90.1	(40-151)
Benzene	20.0		20.0	99.9	(80-124)
Bromochloromethane	20.0		19.7	98.6	(73-117)
Bromodichloromethane	20.0		17.3	86.7	(79-126)
Bromoform	20.0		17.4	86.9	(70-123)
Bromomethane	20.0		15.4	76.9	(45-148)
2-Butanone	100		98.3	98.3	(50-152)
Carbon Disulfide	20.0		11.8	59	(57-131)
Carbon Tetrachloride	20.0		18.1	90.4	(62-132)
Chlorobenzene	20.0		20.3	101	(85-117)
Chlorodibromomethane	20.0		15.6	78.1	(77-122)
Chloroethane	20.0		13.8	69.2	(51-142)
Chloroform	20.0		20.3	101	(78-122)
Chloromethane	20.0		15.9	79.5	(38-156)
Cyclohexane	20.0		20.1	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.2	86.2	(59-133)
1,2-Dibromoethane	20.0		18.3	91.7	(80-124)
1,2-Dichlorobenzene	20.0		21.6	108	(82-118)
1,3-Dichlorobenzene	20.0		22.0	110	(81-118)
1,4-Dichlorobenzene	20.0		21.3	106	(81-116)
Dichlorodifluoromethane	20.0		13.4	67.1	(17-166)
1,1-Dichloroethane	20.0		19.8	98.9	(78-124)
1,2-Dichloroethane	20.0		19.2	96	(70-133)
1,1-Dichloroethene	20.0		18.2	91.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.7	98.7	(78-125)
trans-1,2-Dichloroethen	20.0		20.0	100	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		16.5	82.7	(81-121)
trans-1,3-Dichloroprope	20.0		18.0	89.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		385	76.9	(1-280)
Ethylbenzene	20.0		21.1	105	(80-124)
Freon 113	20.0		19.7	98.3	(50-130)
2-Hexanone	100		89.0	89	(65-154)
Isopropylbenzene	20.0		23.7	119	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		20.4	102	(70-130)
Methyl t-Butyl Ether	20.0		19.2	95.9	(69-115)
4-Methyl-2-Pentanone(MI	100		93.6	93.6	(71-146)
Methylene Chloride	20.0		21.1	105	(76-121)
Styrene	20.0		20.0	99.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		22.0	110	(74-135)
Tetrachloroethene	20.0		18.8	94.2	(72-124)
Toluene	20.0		21.2	106	(80-125)
1,2,3-Trichlorobenzene	20.0		20.3	101	(61-126)
1,2,4-Trichlorobenzene	20.0		18.5	92.6	(67-123)
1,1,1-Trichloroethane	20.0		21.1	106	(66-130)
1,1,2-Trichloroethane	20.0		20.3	101	(82-126)
Trichloroethene	20.0		19.0	95.1	(77-124)
Trichlorofluoromethane	20.0		16.5	82.4	(38-123)
Vinyl Chloride	20.0		15.9	79.7	(27-138)
o-Xylene	20.0		18.4	91.8	(79-124)
mp-Xylene	40.0		43.3	108	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		95.5	95.5	(40-151)
Benzene	20.0		20.0	99.8	(80-124)
Bromochloromethane	20.0		19.8	98.9	(73-117)
Bromodichloromethane	20.0		19.9	99.3	(79-126)
Bromoform	20.0		18.0	90.1	(70-123)
Bromomethane	20.0		20.7	104	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		16.5	82.6	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		19.3	96.7	(85-117)
Chlorodibromomethane	20.0		19.4	97	(77-122)
Chloroethane	20.0		15.8	79.1	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		16.8	84	(38-156)
Cyclohexane	20.0		20.6	103	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.7	(59-133)
1,2-Dibromoethane	20.0		18.6	92.9	(80-124)
1,2-Dichlorobenzene	20.0		20.3	101	(82-118)
1,3-Dichlorobenzene	20.0		20.5	102	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.4	(81-116)
Dichlorodifluoromethane	20.0		14.2	71.2	(17-166)
1,1-Dichloroethane	20.0		18.5	92.5	(78-124)
1,2-Dichloroethane	20.0		19.4	96.8	(70-133)
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.6	97.8	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.2	(71-122)
1,2-Dichloropropane	20.0		20.2	101	(81-127)
cis-1,3-Dichloropropene	20.0		17.8	89.2	(81-121)
trans-1,3-Dichloroprope	20.0		16.6	82.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.1	(1-280)
Ethylbenzene	20.0		21.2	106	(80-124)
Freon 113	20.0		18.3	91.6	(50-130)
2-Hexanone	100		84.4	84.4	(65-154)
Isopropylbenzene	20.0		18.8	93.8	(73-129)
Methyl acetate	20.0		18.9	94.6	(70-130)
Methyl cyclohexane	20.0		21.1	105	(70-130)
Methyl t-Butyl Ether	20.0		17.8	88.9	(69-115)
4-Methyl-2-Pentanone(MI	100		105	105	(71-146)
Methylene Chloride	20.0		20.9	104	(76-121)
Styrene	20.0		19.0	94.8	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.0	95.1	(74-135)
Tetrachloroethene	20.0		19.1	95.6	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.5	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		19.1	95.4	(66-130)
1,1,2-Trichloroethane	20.0		19.4	96.9	(82-126)
Trichloroethene	20.0		20.0	100	(77-124)
Trichlorofluoromethane	20.0		17.1	85.6	(38-123)
Vinyl Chloride	20.0		17.8	88.9	(27-138)
o-Xylene	20.0		17.9	89.6	(79-124)
mp-Xylene	40.0		43.4	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-031

Matrix Spike - Sample No: MRC-MW-100A-...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
Acetone	100	94.5	94.5	8	40	(40-151)
Benzene	20.0	20.7	103	5	26	(80-124)
Bromochloromethane	20.0	20.1	100	3	19	(73-117)
Bromodichloromethane	20.0	16.4	81.9	7	16	(79-126)
Bromoform	20.0	14.9	74.3	0	16	(70-123)
Bromomethane	20.0	15.3	76.7	7	26	(45-148)
2-Butanone	100	93.8	93.8	2	16	(50-152)
Carbon Disulfide	20.0	14.2	70.8	12	28	(57-131)
Carbon Tetrachloride	20.0	18.5	92.5	9	17	(62-132)
Chlorobenzene	20.0	19.5	97.4	5	15	(85-117)
Chlorodibromomethane	20.0	14.4	71.8*	4	15	(77-122)
Chloroethane	20.0	13.0	64.8	12	24	(51-142)
Chloroform	20.0	19.5	97.4	5	16	(78-122)
Chloromethane	20.0	17.7	88.3	3	27	(38-156)
Cyclohexane	20.0	22.5	113	4	20	(66-130)
1,2-Dibromo-3-chloropropane	20.0	16.4	82.1	4	26	(59-133)
1,2-Dibromoethane	20.0	18.0	89.8	2	19	(80-124)
1,2-Dichlorobenzene	20.0	20.6	103	1	15	(82-118)
1,3-Dichlorobenzene	20.0	21.0	105	2	16	(81-118)
1,4-Dichlorobenzene	20.0	20.4	102	2	15	(81-116)
Dichlorodifluoromethane	20.0	14.1	70.3	7	24	(17-166)
1,1-Dichloroethane	20.0	25.6	101	7	15	(78-124)
1,2-Dichloroethane	20.0	19.3	96.7	5	19	(70-133)
1,1-Dichloroethene	20.0	22.7	93.8	9	21	(63-128)
cis-1,2-Dichloroethene	20.0	23.2	105	6	21	(78-125)
trans-1,2-Dichloroethene	20.0	20.9	104	8	22	(71-122)
1,2-Dichloropropane	20.0	20.5	103	4	15	(81-127)
cis-1,3-Dichloropropene	20.0	15.5	77.5*	2	16	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-031

Matrix Spike - Sample No: MRC-MW-100A-...MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	MSD % RPD #	QC LIMITS RPD	QC LIMITS REC
trans-1,3-Dichloropropene	20.0	16.9	84.7	1	18	(78-126)
1,4-Dioxane	500	407	81.4	10	40	(1-280)
Ethylbenzene	20.0	20.6	103	4	19	(80-124)
Freon 113	20.0	20.4	102	6	26	(50-130)
2-Hexanone	100	87.1	87.1	3	17	(65-154)
Isopropylbenzene	20.0	23.7	118	2	18	(73-129)
Methyl acetate	20.0	16.8	84	4	18	(70-130)
Methyl cyclohexane	20.0	24.5	123	4	18	(70-130)
Methyl t-Butyl Ether	20.0	19.4	97.2	1	20	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	91.4	91.4	3	16	(71-146)
Methylene Chloride	20.0	20.7	103	3	17	(76-121)
Styrene	20.0	19.3	96.3	4	16	(79-123)
1,1,2,2-Tetrachloroethane	20.0	21.1	105	1	16	(74-135)
Tetrachloroethene	20.0	18.7	93.7	5	38	(72-124)
Toluene	20.0	21.1	106	5	20	(80-125)
1,2,3-Trichlorobenzene	20.0	19.5	97.7	8	36	(61-126)
1,2,4-Trichlorobenzene	20.0	18.1	90.4	7	22	(67-123)
1,1,1-Trichloroethane	20.0	21.7	105	5	20	(66-130)
1,1,2-Trichloroethane	20.0	19.8	99	0	15	(82-126)
Trichloroethene	20.0	34.5	103	6	18	(77-124)
Trichlorofluoromethane	20.0	16.9	84.6	10	23	(38-123)
Vinyl Chloride	20.0	16.5	82.3	9	40	(27-138)
o-Xylene	20.0	17.7	88.7	4	19	(79-124)
mp-Xylene	40.0	42.1	105	5	21	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 52 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Matrix Spike - Sample No: MRC-MW-100A-0...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
Acetone	100	0	87.2	87.2	(40-151)
Benzene	20.0	0	21.6	108	(80-124)
Bromochloromethane	20.0	0	20.7	104	(73-117)
Bromodichloromethane	20.0	0	17.6	87.9	(79-126)
Bromoform	20.0	0	14.9	74.5	(70-123)
Bromomethane	20.0	0	16.4	81.9	(45-148)
2-Butanone	100	0	91.6	91.6	(50-152)
Carbon Disulfide	20.0	0	15.9	79.4	(57-131)
Carbon Tetrachloride	20.0	0	20.1	101	(62-132)
Chlorobenzene	20.0	0	20.5	102	(85-117)
Chlorodibromomethane	20.0	0	14.9	74.4*	(77-122)
Chloroethane	20.0	0	14.7	73.3	(51-142)
Chloroform	20.0	0	20.6	103	(78-122)
Chloromethane	20.0	0	18.1	90.7	(38-156)
Cyclohexane	20.0	0	23.4	117	(66-130)
1,2-Dibromo-3-chloropropane	20.0	0	15.8	78.9	(59-133)
1,2-Dibromoethane	20.0	0	18.3	91.4	(80-124)
1,2-Dichlorobenzene	20.0	0	20.8	104	(82-118)
1,3-Dichlorobenzene	20.0	0	21.4	107	(81-118)
1,4-Dichlorobenzene	20.0	0	20.8	104	(81-116)
Dichlorodifluoromethane	20.0	0	15.0	75.1	(17-166)
1,1-Dichloroethane	20.0	5.4	27.4	110	(78-124)
1,2-Dichloroethane	20.0	0	20.3	102	(70-133)
1,1-Dichloroethene	20.0	3.9	24.8	104	(63-128)
cis-1,2-Dichloroethene	20.0	2.3	24.6	111	(78-125)
trans-1,2-Dichloroethene	20.0	0	22.7	113	(71-122)
1,2-Dichloropropane	20.0	0	21.3	107	(81-127)
cis-1,3-Dichloropropene	20.0	0	15.8	79.2*	(81-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: _____ SAS No.: _____ SDG No.: TMM-031

Matrix Spike - Sample No: MRC-MW-100A-0...MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC#	QC LIMIT REC
trans-1,3-Dichloropropene	20.0	0	17.1	85.7	(78-126)
1,4-Dioxane	500	0	369	73.9	(1-280)
Ethylbenzene	20.0	0	21.6	108	(80-124)
Freon 113	20.0	0	21.7	108	(50-130)
2-Hexanone	100	0	84.8	84.8	(65-154)
Isopropylbenzene	20.0	0	24.1	121	(73-129)
Methyl acetate	20.0	0	16.2	80.8	(70-130)
Methyl cyclohexane	20.0	0	23.6	118	(70-130)
Methyl t-Butyl Ether	20.0	0	19.2	95.9	(69-115)
4-Methyl-2-Pentanone(MIBK)	100	0	89.2	89.2	(71-146)
Methylene Chloride	20.0	0	21.2	106	(76-121)
Styrene	20.0	0	20.1	100	(79-123)
1,1,2,2-Tetrachloroethane	20.0	0	20.9	105	(74-135)
Tetrachloroethene	20.0	0	19.7	98.5	(72-124)
Toluene	20.0	0	22.1	110	(80-125)
1,2,3-Trichlorobenzene	20.0	0	18.0	90.2	(61-126)
1,2,4-Trichlorobenzene	20.0	0	16.9	84.5	(67-123)
1,1,1-Trichloroethane	20.0	0.66	22.9	111	(66-130)
1,1,2-Trichloroethane	20.0	0	19.9	99.4	(82-126)
Trichloroethene	20.0	13.8	36.6	114	(77-124)
Trichlorofluoromethane	20.0	0	18.7	93.5	(38-123)
Vinyl Chloride	20.0	0	18.0	89.9	(27-138)
o-Xylene	20.0	0	18.5	92.4	(79-124)
mp-Xylene	40.0	0	44.3	111	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments: _____

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Lab File ID: 315051407.D Date Analyzed: 5/14/2015

Instrument ID: ms03.i Time Analyzed: 12:20

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	581104	5.672	534163	7.429	1544615	3.697
UPPER LIMIT	1162208	6.172	1068326	7.929	3089230	4.197
LOWER LIMIT	290552	5.172	267082	6.929	772308	3.197
SAMPLE NO.						
2177870(LCS)	605883	5.667	536457	7.429	1603544	3.697

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Lab File ID: 315051501.D Date Analyzed: 5/15/2015

Instrument ID: ms03.i Time Analyzed: 11:47

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	620782	5.672	556084	7.429	1627988	3.697
UPPER LIMIT	1241564	6.172	1112168	7.929	3255976	4.197
LOWER LIMIT	310391	5.172	278042	6.929	813994	3.197
SAMPLE NO.						
1800	620782	5.672	556084	7.429	1627988	3.697
2178404(MB)	576550	5.672	477949	7.429	1589997	3.703
2178405(LCS)	620099	5.673	538178	7.429	1623556	3.697
TB-050615	559272	5.673	463700	7.429	1552878	3.703
MRC-MW-100A-05061	549744	5.672	456977	7.429	1514235	3.697
MRC-MW-100B-05061	555940	5.672	460290	7.429	1507742	3.703
MRC-MW-19A-050615	540494	5.672	448544	7.429	1507093	3.697
MRC-MW-22B-050615	533019	5.672	444174	7.429	1470539	3.703
MRC-MW-22A-050615	542093	5.673	453002	7.429	1477608	3.703
MRC-MW-100A-0...M	601309	5.673	521254	7.430	1563806	3.703
MRC-MW-100A-...MS	603354	5.672	518872	7.429	1573841	3.703

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-031

Lab File ID: 15051957.D Date Analyzed: 5/19/2015

Instrument ID: ms15.i Time Analyzed: 20:01

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	442721	5.913	482015	7.686	1040326	3.910
UPPER LIMIT	885442	6.413	964030	8.186	2080652	4.410
LOWER LIMIT	221361	5.413	241008	7.186	520163	3.410
SAMPLE NO.						
2180033(MB)	340198	5.912	318831	7.686	905002	3.910
2180034(LCS)	443472	5.913	470706	7.686	1024069	3.910
MRC-MW-100B-05061	306295	5.912	276449	7.686	794855	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Semivolatile Organics by 522 Summary Forms

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

ALS Environmental Services

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2014 16:43
End Cal Date : 13-AUG-2014 20:46
Quant Method : ISTD
Origin : Force
Target Version : 4.14
Integrator : HP RTE
Method file : \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12_522_140813.m
Last Edit : 13-Aug-2014 22:47 ms12.i

Calibration File Names:
Level 1: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081303.D
Level 2: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081304.D
Level 3: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081305.D
Level 4: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081306.D
Level 5: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081307.D
Level 6: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081308.D
Level 7: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081309.D
Level 8: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081310.D
Level 9: \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12081311.D

Compound	0.0200000 Level 1	0.0500000 Level 2	0.1000000 Level 3	0.2000000 Level 4	0.5000000 Level 5	1.0000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
	1.5000 Level 7	2.0000 Level 8	3.0000 Level 9								
19 1,4-Dioxane	249	394	889	1829	4280	8555					
	16492	40374	79045				WLINR	0.000e+000	1.27594		0.99954
$ 18 1,4-Dioxane-d8	0.70779	0.70413	0.72141	0.70907	0.71117	0.70581					
	0.71183	0.71883	0.71600				AVRG		0.71178		0.82847

ALS Environmental Services

INITIAL CALIBRATION DATA

Start Cal Date : 13-AUG-2014 16:43
End Cal Date : 13-AUG-2014 20:46
Quant Method : ISTD
Origin : Force
Target Version : 4.14
Integrator : HP RTE
Method file : \\Almdtws014\TargetData\Chem2\ms12.i\12-2014\12140813.B\12_522_140813.m
Last Edit : 13-Aug-2014 22:47 ms12.i

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Wt Linear	Amt = b + m1*Rsp	Amount

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date: 05/08/15 Time: 1950

Lab File ID: 12050801 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.42e-003	3.5e-003	1.0093754	0.00001	26.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6260601	0.6260601	0.00001	-12.07	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date: 05/09/15 Time: 0121

Lab File ID: 12050814 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.58e-002	5.e-002	1.3920994	0.00001	-8.40	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6354758	0.6354758	0.00001	-10.75	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Instrument ID: MS12 Calibration Date: 05/10/15 Time: 1658

Lab File ID: 12051001 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.4e-003	3.5e-003	1.0148555	0.00001	25.71	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6269228	0.6269228	0.00001	-11.95	30.00	AVRG

FORM VII SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2174900	83								0
02	2174901LCSLO	81								0
03	MRC-MW-100A-	74								0
04	MRC-MW-100B-	75								0
05	MRC-MW-19A-0	78								0
06	MRC-MW-22B-0	75								0
07	MRC-MW-22A-0	76								0
08	MRC-MW-100B-	81								0
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Matrix Spike - Sample No.: 2174901LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0672244	96	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2174900

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Lab File ID: 12050802 Lab Sample ID: 2174900

Instrument ID: MS12 Date Extracted: 05/08/15

Matrix: (soil/water) WATER Date Analyzed: 05/08/15

Level:(low/med) LOW Time Analyzed: 2018

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2174901LCSLO	2174901	12050803	05/08/15
02	MRC-MW-100A-	2069284003	12050821	05/09/15
03	MRC-MW-100B-	2069284004	12050822	05/09/15
04	MRC-MW-19A-0	2069284005	12050823	05/09/15
05	MRC-MW-22B-0	2069284006	12050824	05/09/15
06	MRC-MW-22A-0	2069284007	12050825	05/09/15
07	MRC-MW-100B-	2069284004	12051002	05/10/15
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2174900

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Matrix: (soil/water) WATER Lab Sample ID: 2174900

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050802

Level: (low/med) LOW Date Received: 05/08/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/08/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/08/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/08/15

Lab File ID (Standard): 12050801 Time Analyzed: 1950

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49171	6.36				
	UPPER LIMIT	63922	6.86				
	LOWER LIMIT	34420	5.86				
	SAMPLE NO.						
01	2174900	50398	6.36				
02	2174901LCSLO	52006	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/09/15

Lab File ID (Standard): 12050814 Time Analyzed: 0121

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49865	6.36				
	UPPER LIMIT	64825	6.86				
	LOWER LIMIT	34906	5.86				
	SAMPLE NO.						
01	MRC-MW-100A-	49419	6.35				
02	MRC-MW-100B-	51835	6.36				
03	MRC-MW-19A-0	52411	6.36				
04	MRC-MW-22B-0	51418	6.36				
05	MRC-MW-22A-0	49724	6.36				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/10/15

Lab File ID (Standard): 12051001 Time Analyzed: 1658

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49148	6.35				
	UPPER LIMIT	63892	6.85				
	LOWER LIMIT	34404	5.85				
	SAMPLE NO.						
01	MRC-MW-100B-	49143	6.35				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/08/15	1950	8.36			
02	2174900	2174900	05/08/15	2018	8.36			
03	2174901LCSLO	2174901	05/08/15	2043	8.36			
04	MIDCHECK-5	MIDCHECK-5	05/09/15	0121	8.38			
05	MRC-MW-100A-	2069284003	05/09/15	0420	8.36			
06	MRC-MW-100B-	2069284004	05/09/15	0445	8.36			
07	MRC-MW-19A-0	2069284005	05/09/15	0511	8.36			
08	MRC-MW-22B-0	2069284006	05/09/15	0536	8.38			
09	MRC-MW-22A-0	2069284007	05/09/15	0602	8.36			
10	1800	1800	05/10/15	1658	8.36			
11	MRC-MW-100B-	2069284004	05/10/15	1804	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM031

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

2015/112IC06247
Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1030	0.1000	103		90 - 110	M	5/11/2015	23:28	A051215 23
	Arsenic	0.1029	0.1000	103		90 - 110	M	5/11/2015	23:28	A051215 23
	Barium	0.0980	0.1000	98		90 - 110	M	5/11/2015	23:28	A051215 23
	Beryllium	0.0997	0.1000	100		90 - 110	M	5/11/2015	23:28	A051215 23
	Cadmium	0.0975	0.1000	98		90 - 110	M	5/11/2015	23:28	A051215 23
	Chromium	0.1018	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Cobalt	0.1019	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Copper	0.1019	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Lead	0.0999	0.1000	100		90 - 110	M	5/11/2015	23:28	A051215 23
	Manganese	0.1024	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Molybdenum	0.1018	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Nickel	0.0974	0.1000	97		90 - 110	M	5/11/2015	23:28	A051215 23
	Selenium	0.1016	0.1000	102		90 - 110	M	5/11/2015	23:28	A051215 23
	Silver	0.0982	0.1000	98		90 - 110	M	5/11/2015	23:28	A051215 23
	Thallium	0.0979	0.1000	98		90 - 110	M	5/11/2015	23:28	A051215 23
	Vanadium	0.1026	0.1000	103		90 - 110	M	5/11/2015	23:28	A051215 23
LLICV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/11/2015	23:35	A051215 23
	Barium	0.0050	0.0050	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/11/2015	23:35	A051215 23
	Chromium	0.0019	0.0020	95		70 - 130	M	5/11/2015	23:35	A051215 23
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Copper	0.0051	0.0050	102		70 - 130	M	5/11/2015	23:35	A051215 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Manganese	0.0050	0.0050	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/11/2015	23:35	A051215 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/11/2015	23:35	A051215 23
	Selenium	0.0050	0.0050	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Thallium	0.0010	0.0010	100		70 - 130	M	5/11/2015	23:35	A051215 23
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/11/2015	23:35	A051215 23

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

2015/112IC06247
Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1015	0.1000	102		90 - 110	M	5/12/2015	00:33	A051215 23
	Arsenic	0.1003	0.1000	100		90 - 110	M	5/12/2015	00:33	A051215 23
	Barium	0.0964	0.1000	96		90 - 110	M	5/12/2015	00:33	A051215 23
	Beryllium	0.0945	0.1000	94		90 - 110	M	5/12/2015	00:33	A051215 23
	Cadmium	0.0960	0.1000	96		90 - 110	M	5/12/2015	00:33	A051215 23
	Chromium	0.0997	0.1000	100		90 - 110	M	5/12/2015	00:33	A051215 23
	Cobalt	0.1012	0.1000	101		90 - 110	M	5/12/2015	00:33	A051215 23
	Copper	0.1019	0.1000	102		90 - 110	M	5/12/2015	00:33	A051215 23
	Lead	0.0998	0.1000	100		90 - 110	M	5/12/2015	00:33	A051215 23
	Manganese	0.1014	0.1000	101		90 - 110	M	5/12/2015	00:33	A051215 23
	Molybdenum	0.0992	0.1000	99		90 - 110	M	5/12/2015	00:33	A051215 23
	Nickel	0.0974	0.1000	97		90 - 110	M	5/12/2015	00:33	A051215 23
	Selenium	0.0989	0.1000	99		90 - 110	M	5/12/2015	00:33	A051215 23
	Silver	0.0957	0.1000	96		90 - 110	M	5/12/2015	00:33	A051215 23
	Thallium	0.0980	0.1000	98		90 - 110	M	5/12/2015	00:33	A051215 23
	Vanadium	0.1002	0.1000	100		90 - 110	M	5/12/2015	00:33	A051215 23
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/12/2015	00:40	A051215 23
	Arsenic	0.0033	0.0030	110		70 - 130	M	5/12/2015	00:40	A051215 23
	Barium	0.0051	0.0050	102		70 - 130	M	5/12/2015	00:40	A051215 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/12/2015	00:40	A051215 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/12/2015	00:40	A051215 23
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Copper	0.0051	0.0050	102		70 - 130	M	5/12/2015	00:40	A051215 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Manganese	0.0052	0.0050	104		70 - 130	M	5/12/2015	00:40	A051215 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/12/2015	00:40	A051215 23
	Selenium	0.0046	0.0050	92		70 - 130	M	5/12/2015	00:40	A051215 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Thallium	0.0010	0.0010	100		70 - 130	M	5/12/2015	00:40	A051215 23
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/12/2015	00:40	A051215 23

6020 3015
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: 2015/112IC06247 Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1018	0.1000	102		90 - 110	M	5/12/2015	01:21	A051215 23
	Arsenic	0.0998	0.1000	100		90 - 110	M	5/12/2015	01:21	A051215 23
	Barium	0.0967	0.1000	97		90 - 110	M	5/12/2015	01:21	A051215 23
	Beryllium	0.0950	0.1000	95		90 - 110	M	5/12/2015	01:21	A051215 23
	Cadmium	0.0969	0.1000	97		90 - 110	M	5/12/2015	01:21	A051215 23
	Chromium	0.1004	0.1000	100		90 - 110	M	5/12/2015	01:21	A051215 23
	Cobalt	0.1013	0.1000	101		90 - 110	M	5/12/2015	01:21	A051215 23
	Copper	0.1023	0.1000	102		90 - 110	M	5/12/2015	01:21	A051215 23
	Lead	0.0991	0.1000	99		90 - 110	M	5/12/2015	01:21	A051215 23
	Manganese	0.1018	0.1000	102		90 - 110	M	5/12/2015	01:21	A051215 23
	Molybdenum	0.1002	0.1000	100		90 - 110	M	5/12/2015	01:21	A051215 23
	Nickel	0.0976	0.1000	98		90 - 110	M	5/12/2015	01:21	A051215 23
	Selenium	0.0991	0.1000	99		90 - 110	M	5/12/2015	01:21	A051215 23
	Silver	0.0965	0.1000	96		90 - 110	M	5/12/2015	01:21	A051215 23
	Thallium	0.0976	0.1000	98		90 - 110	M	5/12/2015	01:21	A051215 23
	Vanadium	0.1013	0.1000	101		90 - 110	M	5/12/2015	01:21	A051215 23
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/12/2015	01:28	A051215 23
	Barium	0.0050	0.0050	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/12/2015	01:28	A051215 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/12/2015	01:28	A051215 23
	Cobalt	0.0051	0.0050	102		70 - 130	M	5/12/2015	01:28	A051215 23
	Copper	0.0051	0.0050	102		70 - 130	M	5/12/2015	01:28	A051215 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Manganese	0.0051	0.0050	102		70 - 130	M	5/12/2015	01:28	A051215 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Nickel	0.0050	0.0050	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Selenium	0.0050	0.0050	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Thallium	0.0010	0.0010	100		70 - 130	M	5/12/2015	01:28	A051215 23
	Vanadium	0.0024	0.0020	120		70 - 130	M	5/12/2015	01:28	A051215 23

6020 3015
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

2015/112IC06247
Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1017	0.1000	102		90 - 110	M	5/12/2015	02:09	A051215 23
	Arsenic	0.1014	0.1000	101		90 - 110	M	5/12/2015	02:09	A051215 23
	Barium	0.0960	0.1000	96		90 - 110	M	5/12/2015	02:09	A051215 23
	Beryllium	0.0946	0.1000	95		90 - 110	M	5/12/2015	02:09	A051215 23
	Cadmium	0.0960	0.1000	96		90 - 110	M	5/12/2015	02:09	A051215 23
	Chromium	0.0994	0.1000	99		90 - 110	M	5/12/2015	02:09	A051215 23
	Cobalt	0.1006	0.1000	101		90 - 110	M	5/12/2015	02:09	A051215 23
	Copper	0.1013	0.1000	101		90 - 110	M	5/12/2015	02:09	A051215 23
	Lead	0.0999	0.1000	100		90 - 110	M	5/12/2015	02:09	A051215 23
	Manganese	0.1007	0.1000	101		90 - 110	M	5/12/2015	02:09	A051215 23
	Molybdenum	0.1005	0.1000	100		90 - 110	M	5/12/2015	02:09	A051215 23
	Nickel	0.0964	0.1000	96		90 - 110	M	5/12/2015	02:09	A051215 23
	Selenium	0.0991	0.1000	99		90 - 110	M	5/12/2015	02:09	A051215 23
	Silver	0.0959	0.1000	96		90 - 110	M	5/12/2015	02:09	A051215 23
	Thallium	0.0978	0.1000	98		90 - 110	M	5/12/2015	02:09	A051215 23
	Vanadium	0.1005	0.1000	100		90 - 110	M	5/12/2015	02:09	A051215 23
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Arsenic	0.0033	0.0030	110		70 - 130	M	5/12/2015	02:17	A051215 23
	Barium	0.0050	0.0050	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/12/2015	02:17	A051215 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/12/2015	02:17	A051215 23
	Cobalt	0.0051	0.0050	102		70 - 130	M	5/12/2015	02:17	A051215 23
	Copper	0.0051	0.0050	102		70 - 130	M	5/12/2015	02:17	A051215 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Manganese	0.0051	0.0050	102		70 - 130	M	5/12/2015	02:17	A051215 23
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/12/2015	02:17	A051215 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/12/2015	02:17	A051215 23
	Selenium	0.0048	0.0050	96		70 - 130	M	5/12/2015	02:17	A051215 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Thallium	0.0010	0.0010	100		70 - 130	M	5/12/2015	02:17	A051215 23
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/12/2015	02:17	A051215 23

6020 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/11/2015	23:32	A051215 2302 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/11/2015	23:32	A051215 2302 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/11/2015	23:32	A051215 2302 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/11/2015	23:32	A051215 2302 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/11/2015	23:32	A051215 2302 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/11/2015	23:32	A051215 2302 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/12/2015	00:36	A051215 2302 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/12/2015	00:36	A051215 2302 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/12/2015	00:36	A051215 2302 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	00:36	A051215 2302 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/12/2015	00:36	A051215 2302 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	00:36	A051215 2302 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/12/2015	01:25	A051215 2302 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/12/2015	01:25	A051215 2302 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/12/2015	01:25	A051215 2302 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	01:25	A051215 2302 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/12/2015	01:25	A051215 2302 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	01:25	A051215 2302 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/12/2015	02:13	A051215 2302 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/12/2015	02:13	A051215 2302 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/12/2015	02:13	A051215 2302 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/12/2015	02:13	A051215 2302 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/12/2015	02:13	A051215 2302 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/12/2015	02:13	A051215 2302 (

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2175565			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/11/2015	23:54	A051215 2302 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/11/2015	23:54	A051215 2302 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/11/2015	23:54	A051215 2302 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/11/2015	23:54	A051215 2302 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	5/11/2015	23:54	A051215 2302 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/11/2015	23:54	A051215 2302 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Molybdenum	0.00090	J		0.0022	0.00067	0.00222	M	5/11/2015	23:54	A051215 2302 (
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/11/2015	23:54	A051215 2302 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/11/2015	23:54	A051215 2302 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/11/2015	23:54	A051215 2302 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/11/2015	23:54	A051215 2302 (

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/11/2015	23:39	A051215 2302
	Arsenic	0.0002				-0.00300 - -0.00300	5/11/2015	23:39	A051215 2302
	Barium	0.0004				-0.01000 - -0.01000	5/11/2015	23:39	A051215 2302
	Beryllium	0.00002				-0.001000 - -0.001000	5/11/2015	23:39	A051215 2302
	Cadmium	0.0008				-0.00100 - -0.00100	5/11/2015	23:39	A051215 2302
	Chromium	0.0004				-0.00400 - -0.00400	5/11/2015	23:39	A051215 2302
	Cobalt	0.0006				-0.00600 - -0.00600	5/11/2015	23:39	A051215 2302
	Copper	0.0013				-0.00500 - -0.00500	5/11/2015	23:39	A051215 2302
	Lead	0.0001				-0.00200 - -0.00200	5/11/2015	23:39	A051215 2302
	Manganese	0.0013				-0.01000 - -0.01000	5/11/2015	23:39	A051215 2302
	Molybdenum	1.9989	2.00000	100		80 - 120%	5/11/2015	23:39	A051215 2302
	Nickel	0.0006				-0.00500 - -0.00500	5/11/2015	23:39	A051215 2302
	Selenium	0.0001				-0.00500 - -0.00500	5/11/2015	23:39	A051215 2302
	Silver	0.0004				-0.00200 - -0.00200	5/11/2015	23:39	A051215 2302
	Thallium	0.00003				-0.001000 - -0.001000	5/11/2015	23:39	A051215 2302
	Vanadium	0.0004				-0.00200 - -0.00200	5/11/2015	23:39	A051215 2302
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/11/2015	23:43	A051215 2302
	Arsenic	0.0195	0.02000	98		80 - 120%	5/11/2015	23:43	A051215 2302
	Barium	0.0003				-0.00500 - -0.00500	5/11/2015	23:43	A051215 2302
	Beryllium	0.00002				-0.001000 - -0.001000	5/11/2015	23:43	A051215 2302
	Cadmium	0.0096	0.01000	96		80 - 120%	5/11/2015	23:43	A051215 2302
	Chromium	0.0186	0.02000	93		80 - 120%	5/11/2015	23:43	A051215 2302
	Cobalt	0.0374	0.04000	94		80 - 120%	5/11/2015	23:43	A051215 2302
	Copper	0.0191	0.02000	96		80 - 120%	5/11/2015	23:43	A051215 2302
	Lead	0.0003				-0.00200 - -0.00200	5/11/2015	23:43	A051215 2302
	Manganese	0.0199	0.02000	100		80 - 120%	5/11/2015	23:43	A051215 2302
	Molybdenum	2.0267	2.00000	101		80 - 120%	5/11/2015	23:43	A051215 2302
	Nickel	0.0347	0.04000	87		80 - 120%	5/11/2015	23:43	A051215 2302
	Selenium	0.0182	0.02000	91		80 - 120%	5/11/2015	23:43	A051215 2302
	Silver	0.0186	0.02000	93		80 - 120%	5/11/2015	23:43	A051215 2302
	Thallium	0.00002				-0.001000 - -0.001000	5/11/2015	23:43	A051215 2302
	Vanadium	0.0399	0.04000	100		80 - 120%	5/11/2015	23:43	A051215 2302

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**
2015/112IC06247

Matrix: WATER **Sample ID:** 2069284005 **Client ID:** MRC-MW-19A-050615S **LIMS ID:** 2175567

Percent Solids for Sample: 0.00 **Spiked ID:** 2069284005S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.211		0.001		0.222	95		M
Barium	mg/L	75 - 125	2.193		0.027		2.222	97		M
Beryllium	mg/L	75 - 125	0.20342		0.00323		0.22222	90		M
Cadmium	mg/L	75 - 125	0.212		0.002		0.222	95		M
Chromium	mg/L	75 - 125	0.213		0.001		0.222	95		M
Cobalt	mg/L	75 - 125	1.287		1.099		0.222	85		M
Copper	mg/L	75 - 125	0.437		0.236		0.222	91		M
Lead	mg/L	75 - 125	0.227		0.001		0.222	102		M
Manganese	mg/L	75 - 125	3.165		2.997		0.222	76		M
Molybdenum	mg/L	75 - 125	0.225		0.002	U	0.222	101		M
Nickel	mg/L	75 - 125	1.727		1.548		0.222	81		M
Selenium	mg/L	75 - 125	0.197		0.004		0.222	87		M
Silver	mg/L	75 - 125	0.109		0.002	U	0.111	98		M
Thallium	mg/L	75 - 125	0.2186		0.0010	U	0.2222	98		M
Vanadium	mg/L	75 - 125	0.217		0.001		0.222	97		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**
2015/112IC06247

Matrix: WATER **Sample ID:** 2069284005 **Client ID:** MRC-MW-19A-050615SD **LIMS ID:** 2175568

Percent Solids for Sample: 0.00 **Spiked ID:** 2069284005SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.23		0.00		0.222	104		M
Arsenic	mg/L	75 - 125	0.216		0.001		0.222	97		M
Barium	mg/L	75 - 125	2.225		0.027		2.222	99		M
Beryllium	mg/L	75 - 125	0.21070		0.00320		0.22222	93		M
Cadmium	mg/L	75 - 125	0.216		0.002		0.222	96		M
Chromium	mg/L	75 - 125	0.222		0.001		0.222	100		M
Cobalt	mg/L	75 - 125	1.295		1.099		0.222	88		M
Copper	mg/L	75 - 125	0.444		0.236		0.222	94		M
Lead	mg/L	75 - 125	0.234		0.001		0.222	105		M
Manganese	mg/L	75 - 125	3.175		2.997		0.222	80		M
Molybdenum	mg/L	75 - 125	0.232		0.002	U	0.222	105		M
Nickel	mg/L	75 - 125	1.731		1.548		0.222	82		M
Selenium	mg/L	75 - 125	0.203		0.004		0.222	90		M
Silver	mg/L	75 - 125	0.110		0.002	U	0.111	99		M
Thallium	mg/L	75 - 125	0.2256		0.0010	U	0.2222	102		M
Vanadium	mg/L	75 - 125	0.225		0.001		0.222	101		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2069284005S **Client ID:** MRC-MW-19A-050615SD **LIMS ID:** 2175568

Percent Solids for Sample: 0.00 **Duplicate ID:** 2069284005SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.23		4		M
Arsenic	mg/L	0 - 20	0.211		0.216		2		M
Barium	mg/L	0 - 20	2.193		2.225		1		M
Beryllium	mg/L	0 - 20	0.20342		0.21070		4		M
Cadmium	mg/L	0 - 20	0.212		0.216		2		M
Chromium	mg/L	0 - 20	0.213		0.222		4		M
Cobalt	mg/L	0 - 20	1.287		1.295		1		M
Copper	mg/L	0 - 20	0.437		0.444		2		M
Lead	mg/L	0 - 20	0.227		0.234		3		M
Manganese	mg/L	0 - 20	3.165		3.175		0		M
Molybdenum	mg/L	0 - 20	0.225		0.232		3		M
Nickel	mg/L	0 - 20	1.727		1.731		0		M
Selenium	mg/L	0 - 20	0.197		0.203		3		M
Silver	mg/L	0 - 20	0.109		0.110		1		M
Thallium	mg/L	0 - 20	0.2186		0.2256		3		M
Vanadium	mg/L	0 - 20	0.217		0.225		4		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

2015/112IC06247

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2175566									
	Antimony	mg/L	0.2220	0.2209		100		80 - 120	M
	Arsenic	mg/L	0.2220	0.2078		94		80 - 120	M
	Barium	mg/L	2.2220	2.2427		101		80 - 120	M
	Beryllium	mg/L	0.2220	0.2021		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2160		97		80 - 120	M
	Chromium	mg/L	0.2220	0.2212		100		80 - 120	M
	Cobalt	mg/L	0.2220	0.2221		100		80 - 120	M
	Copper	mg/L	0.2220	0.2197		99		80 - 120	M
	Lead	mg/L	0.2220	0.2255		102		80 - 120	M
	Manganese	mg/L	0.2220	0.2252		101		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2243		101		80 - 120	M
	Nickel	mg/L	0.2220	0.2193		99		80 - 120	M
	Selenium	mg/L	0.2220	0.1953		88		80 - 120	M
	Silver	mg/L	0.1110	0.1138		103		80 - 120	M
	Thallium	mg/L	0.2220	0.2173		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2208		99		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-031

Contract: TMM031|MRC GW 2015/112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-031

Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS

Method: MS

Case No.: Lockheed Martin

SAS No.:

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72109						
2175565	MB for HBN 72109 [MDIG/50767	MB	QC-WAT	5/11/15	45.0	50.0	
2175566	LCS for HBN 72109 [MDIG/50767	LCS	QC-WAT	5/11/15	45.0	50.0	
2069284004	MRC-MW-100B-050615	SAM	WATER	5/11/15	45.0	50.0	
2069284005	MRC-MW-19A-050615	SAM	WATER	5/11/15	45.0	50.0	
2069284005S	MRC-MW-19A-050615S	MS	WATER	5/11/15	45.0	50.0	
2069284005SD	MRC-MW-19A-050615SD	MSD	WATER	5/11/15	45.0	50.0	
2069284006	MRC-MW-22B-050615	SAM	WATER	5/11/15	45.0	50.0	
2069284007	MRC-MW-22A-050615	SAM	WATER	5/11/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-031

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051215 2302

Start Date: 5/11/2015 End Date: 5/12/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2302																										
BLK	1.00	2306			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2309			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2313			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2317			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2320			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	2324			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	2328			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	2332			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	2335			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	2339			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	2343			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	2347																										
ZZZZZZ	1.00	2350																										
2175565	1.00	2354			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2175566	1.00	2358			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0002																										
ZZZZZZ	1.00	0005																										
ZZZZZZ	1.00	0009																										
ZZZZZZ	1.00	0013																										
ZZZZZZ	1.00	0017																										
ZZZZZZ	1.00	0020																										
ZZZZZZ	1.00	0024																										
ZZZZZZ	5.00	0029																										
CCV1	1.00	0033			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0036			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0040			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0044																										
ZZZZZZ	1.00	0047																										
ZZZZZZ	1.00	0051																										
ZZZZZZ	1.00	0055																										
ZZZZZZ	5.00	0059																										
ZZZZZZ	5.00	0102																										
ZZZZZZ	5.00	0106																										
ZZZZZZ	5.00	0110																										
ZZZZZZ	1.00	0113																										

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-031

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051215 2302

Start Date: 5/11/2015 End Date: 5/12/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0117																										
CCV2	1.00	0121			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0125			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0128			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284004	1.00	0132			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284005	1.00	0136			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284005S	1.00	0140			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284005SD	1.00	0143			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284006	1.00	0147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2069284007	1.00	0151			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0155																										
ZZZZZZ	1.00	0158																										
ZZZZZZ	1.00	0202																										
ZZZZZZ	1.00	0206																										
CCV3	1.00	0209			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	0213			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0217			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0221																										
ZZZZZZ	1.00	0224																										
ZZZZZZ	1.00	0228																										
ZZZZZZ	1.00	0232																										
ZZZZZZ	1.00	0236																										
ZZZZZZ	1.00	0239																										
ZZZZZZ	1.00	0243																										
ZZZZZZ	1.00	0247																										
ZZZZZZ	1.00	0250																										
ZZZZZZ	1.00	0254																										
ZZZZZZ	1.00	0258																										
ZZZZZZ	1.00	0302																										
ZZZZZZ	1.00	0305																										
ZZZZZZ	1.00	0309																										
ZZZZZZ	1.00	0313																										
ZZZZZZ	1.00	0317																										
ZZZZZZ	1.00	0323																										

6020 3015

-14-

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM031|MRC GW 2015/112IC0

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-031

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A051215 2302

Start Date: 5/11/2015 **End Date:** 5/12/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:02																									
BLK	1.00	23:06					X																				
STANDARD 1	1.00	23:09					X																				
STANDARD 2	1.00	23:13					X																				
STANDARD 3	1.00	23:17					X																				
STANDARD 4	1.00	23:20					X																				
STANDARD 5	1.00	23:24					X																				
ICV	1.00	23:28					X																				
ICB1	1.00	23:32					X																				
LLICV	1.00	23:35					X																				
ICS-A1	1.00	23:39					X																				
ICS-AB1	1.00	23:43					X																				
ZZZZZZ	1.00	23:47																									
ZZZZZZ	1.00	23:50																									
2175565	1.00	23:54					X																				
2175566	1.00	23:58					X																				
ZZZZZZ	1.00	00:02																									
ZZZZZZ	1.00	00:05																									
ZZZZZZ	1.00	00:09																									
ZZZZZZ	1.00	00:13																									
ZZZZZZ	1.00	00:17																									
ZZZZZZ	1.00	00:20																									
ZZZZZZ	1.00	00:24																									
ZZZZZZ	5.00	00:29																									
CCV1	1.00	00:33					X																				
CCB1	1.00	00:36					X																				
LLCCV	1.00	00:40					X																				
ZZZZZZ	1.00	00:44																									
ZZZZZZ	1.00	00:47																									
ZZZZZZ	1.00	00:51																									
ZZZZZZ	1.00	00:55																									

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM031|MRC GW 2015/112IC0

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-031

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A051215 2302

Start Date: 5/11/2015 **End Date:** 5/12/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	5.00	00:59																										
ZZZZZZ	5.00	01:02																										
ZZZZZZ	5.00	01:06																										
ZZZZZZ	5.00	01:10																										
ZZZZZZ	1.00	01:13																										
ZZZZZZ	1.00	01:17																										
CCV2	1.00	01:21					X																					
CCB2	1.00	01:25					X																					
LLCCV	1.00	01:28					X																					
2069284004	1.00	01:32					X																					
2069284005	1.00	01:36					X																					
2069284005S	1.00	01:40					X																					
2069284005SD	1.00	01:43					X																					
2069284006	1.00	01:47					X																					
2069284007	1.00	01:51					X																					
ZZZZZZ	1.00	01:55																										
ZZZZZZ	1.00	01:58																										
ZZZZZZ	1.00	02:02																										
ZZZZZZ	1.00	02:06																										
CCV3	1.00	02:09					X																					
CCB3	1.00	02:13					X																					
LLCCV	1.00	02:17					X																					
ZZZZZZ	1.00	02:21																										
ZZZZZZ	1.00	02:24																										
ZZZZZZ	1.00	02:28																										
ZZZZZZ	1.00	02:32																										
ZZZZZZ	1.00	02:36																										
ZZZZZZ	1.00	02:39																										
ZZZZZZ	1.00	02:43																										
ZZZZZZ	1.00	02:47																										
ZZZZZZ	1.00	02:50																										

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM031|MRC GW 2015/112IC0

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-031

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A051215 2302

Start Date: 5/11/2015 **End Date:** 5/12/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	02:54																									
ZZZZZZ	1.00	02:58																									
ZZZZZZ	1.00	03:02																									
ZZZZZZ	1.00	03:05																									
ZZZZZZ	1.00	03:09																									
ZZZZZZ	1.00	03:13																									
ZZZZZZ	1.00	03:17																									
ZZZZZZ	1.00	03:23																									

6020 3015

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-031

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/11/2015 End Date: 05/12/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2302												
BLK	BLK	2306	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2309	100		99		100		100		102		98	
STANDARD 2	STANDARD 2	2313	102		101		101		101		102		98	
STANDARD 3	STANDARD 3	2317	101		99		100		100		103		97	
STANDARD 4	STANDARD 4	2320	101		98		100		100		102		99	
STANDARD 5	STANDARD 5	2324	102		99		101		102		104		100	
ICV	ICV	2328	102		98		101		101		103		99	
ICB1	ICB	2332	102		99		102		101		103		100	
LLICV	LLICV	2335	103		99		103		104		106		100	
ICS-A1	ICSA	2339	92		101		96		102		108		105	
ICS-AB1	ICSAB	2343	94		101		98		103		105		106	
CHECK	ZZZZZZ	2347												
CHECK	ZZZZZZ	2350												
2175565	MB for HBN 72109	2354	108		116		101		100		98		102	
2175566	LCS for HBN 7210	2358	102		118		102		101		102		104	
2069114013	ZZZZZZ	0002												
2069114014	ZZZZZZ	0005												
2069114015	ZZZZZZ	0009												
2069114016	ZZZZZZ	0013												
2069114017	ZZZZZZ	0017												
2069114018	ZZZZZZ	0020												
2069114019	ZZZZZZ	0024												
2069114019L	ZZZZZZ	0029												
CCV1	CCV	0033	105		102		105		104		102		104	
CCB1	CCB	0036	104		101		104		103		101		104	
LLCCV	LLCCV	0040	104		100		104		103		103		104	
2069114019P	ZZZZZZ	0044												
2069114020	ZZZZZZ	0047												
2069114021	ZZZZZZ	0051												
2069114022	ZZZZZZ	0055												
2069114013	ZZZZZZ	0059												
2069114016	ZZZZZZ	0102												
2069114017	ZZZZZZ	0106												
2069114018	ZZZZZZ	0110												
2069689001	ZZZZZZ	0113												
2069689001	ZZZZZZ	0117												
CCV2	CCV	0121	107		102		107		105		106		105	
CCB2	CCB	0125	104		99		104		102		101		102	
LLCCV	LLCCV	0128	106		101		105		104		101		103	
2069284004	MRC-MW-100B-0506	0132	99		120		99		98		95		99	
2069284005	MRC-MW-19A-05061	0136	97		112		99		98		96		100	
2069284005S	MRC-MW-19A-05061	0140	97		114		99		100		97		101	
2069284005S	MRC-MW-19A-05061	0143	97		114		99		100		97		102	

6020 3015

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-031

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/11/2015 End Date: 05/12/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2069284006	MRC-MW-22B-05061	0147	102		116		101		101		97		100	
2069284007	MRC-MW-22A-05061	0151	101		116		101		99		96		101	
2069174001	ZZZZZZ	0155												
2069174002	ZZZZZZ	0158												
2069466001	ZZZZZZ	0202												
2069776001	ZZZZZZ	0206												
CCV3	CCV	0209	108		103		108		107		106		106	
CCB3	CCB	0213	105		101		105		103		101		103	
LLCCV	LLCCV	0217	106		101		106		105		102		104	
2069833001	ZZZZZZ	0221												
2175950	ZZZZZZ	0224												
2175951	ZZZZZZ	0228												
2069578003	ZZZZZZ	0232												
2175952	ZZZZZZ	0236												
2175953	ZZZZZZ	0239												
2069578004	ZZZZZZ	0243												
2175253	ZZZZZZ	0247												
2175839	ZZZZZZ	0250												
2175840	ZZZZZZ	0254												
CCV4	ZZZZZZ	0258												
CCB4	ZZZZZZ	0302												
LLCCV	ZZZZZZ	0305												
2067455001	ZZZZZZ	0309												
2067455002	ZZZZZZ	0313												
2069237001	ZZZZZZ	0317												
2069623001	ZZZZZZ	0323												

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-031

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/11/2015 End Date: 05/12/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2302												
BLK	2306	100											
STANDARD 1	2309	100											
STANDARD 2	2313	101											
STANDARD 3	2317	100											
STANDARD 4	2320	101											
STANDARD 5	2324	101											
ICV	2328	102											
ICB	2332	101											
LLICV	2335	103											
ICSA	2339	102											
ICSAB	2343	105											
ZZZZZZ	2347												
ZZZZZZ	2350												
MB for HBN 72109	2354	102											
LCS for HBN 7210	2358	103											
ZZZZZZ	0002												
ZZZZZZ	0005												
ZZZZZZ	0009												
ZZZZZZ	0013												
ZZZZZZ	0017												
ZZZZZZ	0020												
ZZZZZZ	0024												
ZZZZZZ	0029												
CCV	0033	106											
CCB	0036	105											
LLCCV	0040	104											
ZZZZZZ	0044												
ZZZZZZ	0047												
ZZZZZZ	0051												
ZZZZZZ	0055												
ZZZZZZ	0059												
ZZZZZZ	0102												
ZZZZZZ	0106												
ZZZZZZ	0110												
ZZZZZZ	0113												
ZZZZZZ	0117												
CCV	0121	107											
CCB	0125	104											
LLCCV	0128	105											
MRC-MW-100B-0506	0132	101											
MRC-MW-19A-05061	0136	103											
MRC-MW-19A-05061	0140	103											
MRC-MW-19A-05061	0143	103											
MRC-MW-22B-05061	0147	105											

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM031|MRC GW 2015/112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-031

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/11/2015 End Date: 05/12/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
MRC-MW-22A-05061	0151	103											
ZZZZZZ	0155												
ZZZZZZ	0158												
ZZZZZZ	0202												
ZZZZZZ	0206												
CCV	0209	109											
CCB	0213	105											
LLCCV	0217	106											
ZZZZZZ	0221												
ZZZZZZ	0224												
ZZZZZZ	0228												
ZZZZZZ	0232												
ZZZZZZ	0236												
ZZZZZZ	0239												
ZZZZZZ	0243												
ZZZZZZ	0247												
ZZZZZZ	0250												
ZZZZZZ	0254												
ZZZZZZ	0258												
ZZZZZZ	0302												
ZZZZZZ	0305												
ZZZZZZ	0309												
ZZZZZZ	0313												
ZZZZZZ	0317												
ZZZZZZ	0323												

Subcontracted Data

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513214

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1566 (HBN: 148781)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 447081
Analyzed: 05/15/2015 13:11
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 447082
Analyzed: 05/15/2015 13:30
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.04	5.00	101	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1512733001	**MS:**	447083				**MSD:**	447084			
Analyzed:	05/15/2015 13:49	**Analyzed:**	05/15/2015 14:08				**Analyzed:**	05/15/2015 14:28			
Dilution:	1	**Dilution:**	1				**Dilution:**	1			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	0.230	4.2	5	*	79.4	85.3	112.8	4.44	84.0	5.39	0.0	20.0

Duplicate

Sample:	1512733001	**Duplicate:**	1512733002
Analyzed:	05/15/2015 13:49	**Analyzed:**	05/15/2015 14:47
Dilution:	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L

Analyte	Result	Result	RPD	QC Limits	
Perchlorate	0.230	0.270	16.0	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513214

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/1566 (HBN: 148781)		
Analyzed By:	Thomas Bosch		

Continuing Calibration Verification

CCV:	447077			**CCV:**	447085	
Analyzed:	05/15/2015 11:55			**Analyzed:**	05/15/2015 17:38	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.7	25.0	103	25.4	25.0	102

Interference Check Sample

ICSA:	447080		
Analyzed:	05/15/2015 12:52		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.02	1.00	102

Limit of Detection Verification

LODV:	447079			**LODV:**	447086	
Analyzed:	05/15/2015 12:33			**Analyzed:**	05/15/2015 17:57	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.136	0.100	136	0.144	0.100	144

Comments

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	5/20/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/TOTAL METALS/DISSOLVED ORGANIC CARBON/PERCHLORATE**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2070129

SAMPLES:

6/Aqueous/VOCs

MRC-DUP05-051115	MRC-MW-02A-051115	MRC-MW-74A-051115
MRC-MW-96A-051115	MRC-MW-96B-051115	TB-051115

2/Aqueous/1,4-Dioxane

MRC-MW-96A-051115	MRC-MW-96B-051115

4/Aqueous/Total Metals

MRC-DUP05-051115	MRC-MW-02A-051115	MRC-MW-96A-051115
MRC-MW-96B-051115		

6/Aqueous/Dissolved Organic Carbon

MRC-MW-27A-051115	MRC-MW-27B-051115	MRC-MW-34B-051115
MRC-MW-60B-051115	MRC-MW-72B-051115	MRC-MW-81B-051115

3/Aqueous/Perchlorate

MRC-MW-74A-051115	MRC-MW-96A-051115	MRC-MW-96B-051115

Overview

The sample set for LMC-MRC, SDG 2070129 consisted of six (6) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), 1,4-dixoane, select total metals, dissolved organic carbon, and/or perchlorate. One field duplicate sample pair was included in this SDG: MRC-MW-02A-051115/MRC-DUP05-051115.

The samples were collected by Tetra Tech, Inc. on May 11, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, 9060A, and EPA Methods 522 and 6850 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Major - None

Minor

- VOC continuing calibration verification on 5/15/2015 @ 11:47 had a percent difference for 1,4'-dioxane that was greater than the quality control limit (20%) affecting samples MRC-MW-74A-051115, MRC-MW-96A-051115, MRC-MW-96B-051115, and TB-051115. Nondetected results for 1,4'-dioxane were qualified as estimated (UJ).

- The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane	0.51	2.55
Carbon disulfide	0.39	1.39
1,4-Dichlorobenzene	0.31	1.55

Maximum concentration detected in the laboratory method blank 2180033 affecting samples MRC-DUP05-051115, MRC-MW-02A-051115, MRC-MW-96A-051115 (analyzed at 200X dilution), and MRC-MW-96B-051115 (analyzed at 5X dilution).

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetected (U). No action was taken for samples MRC-MW-96A-051115 and MRC-MW-96B-051115 as results for these compounds were reported from the non-diluted analysis.

- VOC surrogate recovery for 4-bromofluorobenzene was greater than the QC limit affecting sample MCR-MW-96A-051115. Detected results for benzene, 1,1-dichloroethene, ethylbenzene, toluene, and vinyl chloride for sample MCR-MW-96A-051115 were qualified as estimated. Other detected results for sample MCR-MW-96A-051115 were reported from a dilution and were not affected.

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

Results for several VOCs exceeded the calibration limit and were therefore analyzed at dilution.

The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Chlorobenzene	0.25	1.25

Maximum concentration detected in the laboratory method blank 2181443 affecting sample MRC-MW-96A-051115 (analyzed at 1000X dilution).

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as results for these compounds were reported from the non-diluted sample.

Molybdenum was detected in the laboratory preparation blank at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.00121	0.00605

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as molybdenum results were nondetects.

Matrix spike (MS) recovery was less than QC limits for perchlorate. Matrix spike duplicate (MSD) recoveries were acceptable. No action was taken on this basis.

Executive Summary

Laboratory Performance: Calibration noncompliance was noted for VOCs. Contaminants were detected in the laboratory method blanks. VOC surrogate recovery noncompliance was noted.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

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Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

VQL – Validation Qualifier
QLCD – Validation Qualifier Code

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 06247	NSAMPLE	MRC-DUP05-051115			MRC-MW-02A-051115			MRC-MW-74A-051115			MRC-MW-96A-051115		
SDG: 2070129	LAB_ID	2070129010			2070129009			2070129011			2070129007		
FRACTION: OV	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MRC-MW-02A-051115											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,1-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		96.5	J	R
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.33	J	P	0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.68	J	P	0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	UJ	C	58.9	UJ	C
2-BUTANONE		1.8	U		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U		0.98	J	PR
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.41	U	A	0.43	U	A	0.39	U		0.39	U	
CARBON DISULFIDE		0.23	U		0.27	U	A	0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U		0.32	U		5.9					
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U		0.31	U	
CYCLOHEXANE		0.29	U		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-96A-051115-DL1			MRC-MW-96A-051115-DL2			MRC-MW-96B-051115			MRC-MW-96B-051115-DL		
SDG: 2070129	LAB_ID	2070129007			2070129007			2070129008			2070129008		
FRACTION: OV	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE								0.22	U				
1,1,2,2-TETRACHLOROETHANE								0.34	U				
1,1,2-TRICHLOROETHANE								0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE								0.26	U				
1,1-DICHLOROETHANE								0.28	U				
1,1-DICHLOROETHENE								0.29	U				
1,2,3-TRICHLOROBENZENE								0.93	U				
1,2,4-TRICHLOROBENZENE								0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE								1.5	U				
1,2-DIBROMOETHANE								0.28	U				
1,2-DICHLOROBENZENE								0.38	U				
1,2-DICHLOROETHANE								0.32	U				
1,2-DICHLOROPROPANE								0.24	U				
1,3-DICHLOROBENZENE								0.25	U				
1,4-DICHLOROBENZENE								0.27	U				
1,4-DIOXANE								58.9	UJ	C			
2-BUTANONE								1.8	U				
2-HEXANONE								1.3	U				
4-METHYL-2-PENTANONE								1.5	U				
ACETONE								3.1	U				
BENZENE											646		
BROMOCHLOROMETHANE								0.32	U				
BROMODICHLOROMETHANE								0.27	U				
BROMOFORM								0.4	U				
BROMOMETHANE								0.39	U				
CARBON DISULFIDE								0.27	J	P			
CARBON TETRACHLORIDE								0.31	U				
CHLOROBENZENE								0.19	U				
CHLORODIBROMOMETHANE								0.45	U				
CHLOROETHANE								0.33	U				
CHLOROFORM								0.21	U				
CHLOROMETHANE								0.31	U				
CIS-1,2-DICHLOROETHENE					47400			8.8					
CIS-1,3-DICHLOROPROPENE								0.31	U				
CYCLOHEXANE								13.8					

PROJ_NO: 06247	NSAMPLE	TB-051115		
SDG: 2070129	LAB_ID	2070129012		
FRACTION: OV	SAMP_DATE	5/11/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U	
1,1-DICHLOROETHANE		0.28	U	
1,1-DICHLOROETHENE		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U	
1,2-DIBROMOETHANE		0.28	U	
1,2-DICHLOROBENZENE		0.38	U	
1,2-DICHLOROETHANE		0.32	U	
1,2-DICHLOROPROPANE		0.24	U	
1,3-DICHLOROBENZENE		0.25	U	
1,4-DICHLOROBENZENE		0.27	U	
1,4-DIOXANE		58.9	UJ	C
2-BUTANONE		4.4	J	P
2-HEXANONE		1.3	U	
4-METHYL-2-PENTANONE		1.5	U	
ACETONE		6.3	J	P
BENZENE		0.23	U	
BROMOCHLOROMETHANE		0.32	U	
BROMODICHLOROMETHANE		0.27	U	
BROMOFORM		0.4	U	
BROMOMETHANE		0.39	U	
CARBON DISULFIDE		0.23	U	
CARBON TETRACHLORIDE		0.31	U	
CHLOROBENZENE		0.19	U	
CHLORODIBROMOMETHANE		0.45	U	
CHLOROETHANE		0.33	U	
CHLOROFORM		0.21	U	
CHLOROMETHANE		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U	
CYCLOHEXANE		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-DUP05-051115			MRC-MW-02A-051115			MRC-MW-74A-051115			MRC-MW-96A-051115		
SDG: 2070129	LAB_ID	2070129010			2070129009			2070129011			2070129007		
FRACTION: OV	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MRC-MW-02A-051115											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1			1			0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U		1.1	J	R
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U		0.45	U		0.5	J	P	0.45	U	
O-XYLENE		0.33	U		0.33	U		0.33	U		0.33	U	
STYRENE		0.24	U		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U		6.6	J	R
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		0.33	U		122					
TRICHLOROFLUOROMETHANE		4.5			4.5			0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U		57.8	J	R

PROJ_NO: 06247	NSAMPLE	MRC-MW-96A-051115-DL1			MRC-MW-96A-051115-DL2			MRC-MW-96B-051115			MRC-MW-96B-051115-DL		
SDG: 2070129	LAB_ID	2070129007			2070129007			2070129008			2070129008		
FRACTION: OV	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE								0.33	U				
ETHYLBENZENE								10.6					
ISOPROPYLBENZENE								13.2					
M+P-XYLENES								60.4					
METHYL ACETATE								0.32	U				
METHYL CYCLOHEXANE								0.3	U				
METHYL TERT-BUTYL ETHER								35.2					
METHYLENE CHLORIDE								0.45	U				
O-XYLENE								103					
STYRENE								0.24	U				
TETRACHLOROETHENE								0.35	U				
TOLUENE								2					
TRANS-1,2-DICHLOROETHENE		104	J	P				1.6					
TRANS-1,3-DICHLOROPROPENE								0.29	U				
TRICHLOROETHENE		3870						18.5					
TRICHLOROFLUOROMETHANE								0.24	U				
VINYL CHLORIDE								0.73	J	P			

PROJ_NO: 06247	NSAMPLE	TB-051115		
SDG: 2070129	LAB_ID	2070129012		
FRACTION: OV	SAMP_DATE	5/11/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U	
ETHYLBENZENE		0.34	U	
ISOPROPYLBENZENE		0.22	U	
M+P-XYLENES		0.52	U	
METHYL ACETATE		0.32	U	
METHYL CYCLOHEXANE		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U	
METHYLENE CHLORIDE		0.45	U	
O-XYLENE		0.33	U	
STYRENE		0.24	U	
TETRACHLOROETHENE		0.35	U	
TOLUENE		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U	
TRICHLOROETHENE		0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U	
VINYL CHLORIDE		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-96A-051115			MRC-MW-96B-051115		
SDG: 2070129	LAB_ID	2070129007			2070129008		
FRACTION: OS	SAMP_DATE	5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		4.3			1.1		

PROJ_NO: 06247	NSAMPLE	MRC-DUP05-051115			MRC-MW-02A-051115			MRC-MW-96A-051115			MRC-MW-96B-051115		
SDG: 2070129	LAB_ID	2070129010			2070129009			2070129007			2070129008		
FRACTION: M	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MRC-MW-02A-051115											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.0011	J	P	0.0012	J	P	0.001	U		0.0014	J	P
BARIUM		0.13			0.13			0.27			0.67		
BERYLLIUM		0.0063			0.0063			0.014			0.0098		
CADMIUM		0.00037	U		0.00037	U		0.00042	J	P	0.0024		
CHROMIUM		0.0021	J	P	0.0021	J	P	0.0014	J	P	0.0018	J	P
COBALT		0.11			0.11			0.51			1.1		
COPPER		0.11			0.11			0.012			0.067		
IRON		0.29			0.31			17.1			0.18		
LEAD		0.00074	U		0.00074	U		0.00089	J	P	0.0021	J	P
MANGANESE		0.056			0.057			4.3			3.3		
MERCURY		0.00017	U		0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
NICKEL		0.15			0.15			0.41			2.1		
SELENIUM		0.0019	U		0.0019	U		0.0019	U		0.0037	J	P
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.0022	J	P	0.0022	J	P	0.00074	U		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-27A-051115			MRC-MW-27B-051115			MRC-MW-34B-051115			MRC-MW-60B-051115		
SDG: 2070129	LAB_ID	2070129003			2070129004			2070129005			2070129001		
FRACTION: MISC	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		2.7			1			1.4			0.43	J	P
PERCHLORATE													

PROJ_NO: 06247	NSAMPLE	MRC-MW-72B-051115			MRC-MW-74A-051115			MRC-MW-81B-051115			MRC-MW-96A-051115		
SDG: 2070129	LAB_ID	2070129006			1513347003			2070129002			1513347001		
FRACTION: MISC	SAMP_DATE	5/11/2015			5/11/2015			5/11/2015			5/11/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			UG/L			MG/L			UG/L		
	PCT_SOLIDS	0.0						0.0					
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON		0.46	J	P				55.3					
PERCHLORATE					0.14	J	P				0.06	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-96B-051115		
SDG: 2070129	LAB_ID	1513347002		
FRACTION: MISC	SAMP_DATE	5/11/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS			
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
DISSOLVED ORGANIC CARBON				
PERCHLORATE		3.6		

Appendix B

Results as Reported by the Laboratory

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129001** Date Collected: 5/11/2015 08:55 Matrix: Water

Sample ID: **MRC-MW-60B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	0.43J	J	mg/L	1.0	0.24	SW846 9060A		5/18/15 12:14	PAG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129002** Date Collected: 5/11/2015 09:35 Matrix: Water

Sample ID: **MRC-MW-81B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	55.3		mg/L	10.0	1.6	SW846 9060A		5/20/14 13:04	PAG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129003** Date Collected: 5/11/2015 10:15 Matrix: Water

Sample ID: **MRC-MW-27A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	2.7		mg/L	1.0	0.24	SW846 9060A		5/18/15 12:14	PAG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129004** Date Collected: 5/11/2015 10:40 Matrix: Water

Sample ID: **MRC-MW-27B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	1.0		mg/L	1.0	0.24	SW846 9060A		5/18/15 12:14	PAG	B

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Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129005** Date Collected: 5/11/2015 11:20 Matrix: Water

Sample ID: **MRC-MW-34B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	1.4		mg/L	1.0	0.24	SW846 9060A		5/18/15 12:14	PAG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129006** Date Collected: 5/11/2015 11:45 Matrix: Water

Sample ID: **MRC-MW-72B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
WET CHEMISTRY										
Total Organic Carbon-Dissolved	0.46J	J	mg/L	1.0	0.24	SW846 9060A		5/18/15 12:14	PAG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129007** Date Collected: 5/11/2015 10:11 Matrix: Water

Sample ID: **MRC-MW-96A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 16:47	DD	A
Benzene	0.98J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 16:47	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:47	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:47	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 16:47	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 16:47	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 16:47	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 16:47	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:47	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 16:47	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 16:47	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:47	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 16:47	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:47	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:47	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 16:47	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:47	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 16:47	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 16:47	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 16:47	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 16:47	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 16:47	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 16:47	DD	A
1,1-Dichloroethene	96.5		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:47	DD	A
cis-1,2-Dichloroethene	47400		ug/L	1000	320	SW846 8260C		5/22/15 04:42	CJG	C
trans-1,2-Dichloroethene	104J	J	ug/L	200	52.0	SW846 8260C		5/20/15 01:10	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 16:47	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 16:47	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 16:47	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 16:47	DD	A
Ethylbenzene	1.1		ug/L	1.0	0.34	SW846 8260C		5/15/15 16:47	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 16:47	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 16:47	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 16:47	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 16:47	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 16:47	DD	A

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129007** Date Collected: 5/11/2015 10:11 Matrix: Water

Sample ID: **MRC-MW-96A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:47	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 16:47	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 16:47	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:47	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 16:47	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 16:47	DD	A
Toluene	6.6		ug/L	1.0	0.23	SW846 8260C			5/15/15 16:47	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 16:47	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 16:47	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 16:47	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:47	DD	A
Trichloroethene	3870		ug/L	200	66.0	SW846 8260C			5/20/15 01:10	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 16:47	DD	A
Vinyl Chloride	57.8		ug/L	1.0	0.30	SW846 8260C			5/15/15 16:47	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 16:47	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 16:47	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.9		%	62 - 133		SW846 8260C			5/15/15 16:47	DD	A
1,2-Dichloroethane-d4 (S)	101		%	62 - 133		SW846 8260C			5/22/15 04:42	CJG	C
1,2-Dichloroethane-d4 (S)	96.7		%	62 - 133		SW846 8260C			5/20/15 01:10	CJG	B
4-Bromofluorobenzene (S)	115	1	%	79 - 114		SW846 8260C			5/15/15 16:47	DD	A
4-Bromofluorobenzene (S)	87.9		%	79 - 114		SW846 8260C			5/20/15 01:10	CJG	B
4-Bromofluorobenzene (S)	87.4		%	79 - 114		SW846 8260C			5/22/15 04:42	CJG	C
Dibromofluoromethane (S)	97.4		%	78 - 116		SW846 8260C			5/15/15 16:47	DD	A
Dibromofluoromethane (S)	95.6		%	78 - 116		SW846 8260C			5/22/15 04:42	CJG	C
Dibromofluoromethane (S)	93		%	78 - 116		SW846 8260C			5/20/15 01:10	CJG	B
Toluene-d8 (S)	92.7		%	76 - 127		SW846 8260C			5/20/15 01:10	CJG	B
Toluene-d8 (S)	93.5		%	76 - 127		SW846 8260C			5/22/15 04:42	CJG	C
Toluene-d8 (S)	102		%	76 - 127		SW846 8260C			5/15/15 16:47	DD	A
SEMIVOLATILES											
1,4-Dioxane	4.3		ug/L	0.070	0.014	EPA 522	5/13/15	JEK	5/14/15 11:11	CGS	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	80		%	70 - 130		EPA 522	5/13/15	JEK	5/14/15 11:11	CGS	G
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129007** Date Collected: 5/11/2015 10:11 Matrix: Water

Sample ID: **MRC-MW-96A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Barium, Total	0.27		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Beryllium, Total	0.014		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Cadmium, Total	0.00042J	J	mg/L	0.0011	0.00037	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Chromium, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Cobalt, Total	0.51		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Copper, Total	0.012		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Iron, Total	17.1		mg/L	0.067	0.022	SW846 6010C	5/13/15	AAM	5/14/15 10:36	SRT	D2
Lead, Total	0.00089J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Manganese, Total	4.3		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/18/15	MNP	5/18/15 12:37	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Nickel, Total	0.41		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:37	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 16:22	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129008** Date Collected: 5/11/2015 11:24 Matrix: Water

Sample ID: **MRC-MW-96B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 17:09	DD	A
Benzene	646		ug/L	5.0	1.2	SW846 8260C		5/20/15 00:36	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 17:09	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 17:09	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 17:09	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 17:09	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 17:09	DD	A
Carbon Disulfide	0.27J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 17:09	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 17:09	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 17:09	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 17:09	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 17:09	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 17:09	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 17:09	DD	A
Cyclohexane	13.8		ug/L	1.0	0.29	SW846 8260C		5/15/15 17:09	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 17:09	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 17:09	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 17:09	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 17:09	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 17:09	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 17:09	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 17:09	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 17:09	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 17:09	DD	A
cis-1,2-Dichloroethene	8.8		ug/L	5.0	1.6	SW846 8260C		5/20/15 00:36	CJG	B
trans-1,2-Dichloroethene	1.6		ug/L	1.0	0.26	SW846 8260C		5/15/15 17:09	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 17:09	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 17:09	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 17:09	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 17:09	DD	A
Ethylbenzene	10.6		ug/L	1.0	0.34	SW846 8260C		5/15/15 17:09	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 17:09	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 17:09	DD	A
Isopropylbenzene	13.2		ug/L	1.0	0.22	SW846 8260C		5/15/15 17:09	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 17:09	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 17:09	DD	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129008** Date Collected: 5/11/2015 11:24 Matrix: Water

Sample ID: **MRC-MW-96B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	35.2		ug/L	1.0	0.33	SW846 8260C			5/15/15 17:09	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 17:09	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 17:09	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 17:09	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 17:09	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 17:09	DD	A
Toluene	2.0		ug/L	1.0	0.23	SW846 8260C			5/15/15 17:09	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 17:09	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 17:09	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 17:09	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 17:09	DD	A
Trichloroethene	18.5		ug/L	5.0	1.7	SW846 8260C			5/20/15 00:36	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 17:09	DD	A
Vinyl Chloride	0.73J	J	ug/L	1.0	0.30	SW846 8260C			5/15/15 17:09	DD	A
o-Xylene	103		ug/L	1.0	0.33	SW846 8260C			5/15/15 17:09	DD	A
mp-Xylene	60.4		ug/L	2.0	0.52	SW846 8260C			5/15/15 17:09	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.6		%	62 - 133		SW846 8260C			5/20/15 00:36	CJG	B
1,2-Dichloroethane-d4 (S)	96.6		%	62 - 133		SW846 8260C			5/15/15 17:09	DD	A
4-Bromofluorobenzene (S)	91.1		%	79 - 114		SW846 8260C			5/20/15 00:36	CJG	B
4-Bromofluorobenzene (S)	110		%	79 - 114		SW846 8260C			5/15/15 17:09	DD	A
Dibromofluoromethane (S)	88.3		%	78 - 116		SW846 8260C			5/20/15 00:36	CJG	B
Dibromofluoromethane (S)	102		%	78 - 116		SW846 8260C			5/15/15 17:09	DD	A
Toluene-d8 (S)	95.7		%	76 - 127		SW846 8260C			5/20/15 00:36	CJG	B
Toluene-d8 (S)	103		%	76 - 127		SW846 8260C			5/15/15 17:09	DD	A
SEMIVOLATILES											
1,4-Dioxane	1.1		ug/L	0.070	0.014	EPA 522	5/13/15	JEK	5/14/15 11:37	CGS	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	80.2		%	70 - 130		EPA 522	5/13/15	JEK	5/14/15 11:37	CGS	G
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Arsenic, Total	0.0014J	J	mg/L	0.0030	0.0010	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Barium, Total	0.67		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Beryllium, Total	0.0098		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Cadmium, Total	0.0024		mg/L	0.0011	0.00037	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Chromium, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129008** Date Collected: 5/11/2015 11:24 Matrix: Water

Sample ID: **MRC-MW-96B-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Cobalt, Total	1.1		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Copper, Total	0.067		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Iron, Total	0.18		mg/L	0.067	0.022	SW846 6010C	5/13/15	AAM	5/14/15 10:40	SRT	D2
Lead, Total	0.0021J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Manganese, Total	3.3		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/18/15	MNP	5/18/15 12:38	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Nickel, Total	2.1		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Selenium, Total	0.0037J	J	mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:41	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/15/15 16:41	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129009** Date Collected: 5/11/2015 13:47 Matrix: Water

Sample ID: **MRC-MW-02A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/19/15 22:36	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 22:36	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:36	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 22:36	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/19/15 22:36	CJG	B
Bromomethane	0.43J	J	ug/L	1.0	0.39	SW846 8260C		5/19/15 22:36	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/19/15 22:36	CJG	B
Carbon Disulfide	0.27J	J	ug/L	1.0	0.23	SW846 8260C		5/19/15 22:36	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:36	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/19/15 22:36	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 22:36	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 22:36	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/19/15 22:36	CJG	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:36	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:36	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/19/15 22:36	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 22:36	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/19/15 22:36	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/19/15 22:36	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 22:36	CJG	B
Dichlorodifluoromethane	1.0		ug/L	1.0	0.33	SW846 8260C		5/19/15 22:36	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 22:36	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:36	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:36	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:36	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 22:36	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 22:36	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:36	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:36	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/19/15 22:36	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 22:36	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 22:36	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/19/15 22:36	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 22:36	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/19/15 22:36	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 22:36	CJG	B

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129009** Date Collected: 5/11/2015 13:47 Matrix: Water

Sample ID: **MRC-MW-02A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:36	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/19/15 22:36	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/19/15 22:36	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/19/15 22:36	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/19/15 22:36	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/19/15 22:36	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/19/15 22:36	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/19/15 22:36	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/19/15 22:36	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/19/15 22:36	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:36	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:36	CJG	B
Trichlorofluoromethane	4.5		ug/L	1.0	0.24	SW846 8260C			5/19/15 22:36	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/19/15 22:36	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:36	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/19/15 22:36	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	92.7		%	62 - 133	SW846 8260C			5/19/15 22:36	CJG	B
4-Bromofluorobenzene (S)	93.4		%	79 - 114	SW846 8260C			5/19/15 22:36	CJG	B
Dibromofluoromethane (S)	87.4		%	78 - 116	SW846 8260C			5/19/15 22:36	CJG	B
Toluene-d8 (S)	94.5		%	76 - 127	SW846 8260C			5/19/15 22:36	CJG	B

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Barium, Total	0.13		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Beryllium, Total	0.0063		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Chromium, Total	0.0021J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Cobalt, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Copper, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Iron, Total	0.31		mg/L	0.067	0.022	SW846 6010C	5/14/15	SRT	5/15/15 11:53	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Manganese, Total	0.057		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/18/15	MNP	5/18/15 12:39	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Nickel, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129009** Date Collected: 5/11/2015 13:47 Matrix: Water

Sample ID: **MRC-MW-02A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1
Vanadium, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:45	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129010** Date Collected: 5/11/2015 00:00 Matrix: Water

Sample ID: **MRC-DUP05-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/19/15 22:53	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 22:53	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:53	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 22:53	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/19/15 22:53	CJG	B
Bromomethane	0.41J	J	ug/L	1.0	0.39	SW846 8260C		5/19/15 22:53	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/19/15 22:53	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 22:53	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:53	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/19/15 22:53	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 22:53	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 22:53	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/19/15 22:53	CJG	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:53	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:53	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/19/15 22:53	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 22:53	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/19/15 22:53	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/19/15 22:53	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 22:53	CJG	B
Dichlorodifluoromethane	1.0		ug/L	1.0	0.33	SW846 8260C		5/19/15 22:53	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 22:53	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:53	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:53	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 22:53	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 22:53	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 22:53	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 22:53	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 22:53	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/19/15 22:53	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 22:53	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 22:53	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/19/15 22:53	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 22:53	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/19/15 22:53	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 22:53	CJG	B

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129010** Date Collected: 5/11/2015 00:00 Matrix: Water

Sample ID: **MRC-DUP05-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:53	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/19/15 22:53	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/19/15 22:53	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/19/15 22:53	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/19/15 22:53	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/19/15 22:53	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/19/15 22:53	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/19/15 22:53	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/19/15 22:53	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/19/15 22:53	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:53	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:53	CJG	B
Trichlorofluoromethane	4.5		ug/L	1.0	0.24	SW846 8260C			5/19/15 22:53	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/19/15 22:53	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 22:53	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/19/15 22:53	CJG	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	93.3		%	62 - 133		SW846 8260C			5/19/15 22:53	CJG	B
4-Bromofluorobenzene (S)	89.8		%	79 - 114		SW846 8260C			5/19/15 22:53	CJG	B
Dibromofluoromethane (S)	89.1		%	78 - 116		SW846 8260C			5/19/15 22:53	CJG	B
Toluene-d8 (S)	92.6		%	76 - 127		SW846 8260C			5/19/15 22:53	CJG	B
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Arsenic, Total	0.0011J	J	mg/L	0.0030	0.0010	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Barium, Total	0.13		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Beryllium, Total	0.0063		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Chromium, Total	0.0021J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Cobalt, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Copper, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Iron, Total	0.29		mg/L	0.067	0.022	SW846 6010C	5/14/15	SRT	5/15/15 11:57	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Manganese, Total	0.056		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/18/15	MNP	5/18/15 12:40	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Nickel, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129010** Date Collected: 5/11/2015 00:00 Matrix: Water

Sample ID: **MRC-DUP05-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1
Vanadium, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	5/13/15	AAM	5/14/15 01:48	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129011** Date Collected: 5/11/2015 15:12 Matrix: Water

Sample ID: **MRC-MW-74A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 18:15	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 18:15	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:15	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 18:15	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 18:15	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 18:15	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 18:15	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 18:15	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:15	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 18:15	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 18:15	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 18:15	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:15	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 18:15	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 18:15	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 18:15	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 18:15	DD	A
1,3-Dichlorobenzene	0.33J	J	ug/L	1.0	0.25	SW846 8260C		5/15/15 18:15	DD	A
1,4-Dichlorobenzene	0.68J	J	ug/L	1.0	0.27	SW846 8260C		5/15/15 18:15	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 18:15	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:15	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 18:15	DD	A
cis-1,2-Dichloroethene	5.9		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:15	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 18:15	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 18:15	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:15	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 18:15	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 18:15	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 18:15	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 18:15	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 18:15	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 18:15	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 18:15	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 18:15	DD	A

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129011** Date Collected: 5/11/2015 15:12 Matrix: Water

Sample ID: **MRC-MW-74A-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/15/15 18:15	DD	A
Methylene Chloride	0.50J	J	ug/L	1.0	0.45	SW846 8260C		5/15/15 18:15	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 18:15	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 18:15	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/15/15 18:15	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 18:15	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/15/15 18:15	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/15/15 18:15	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 18:15	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
Trichloroethene	122		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 18:15	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 18:15	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:15	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/15/15 18:15	DD	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.2		%	62 - 133	SW846 8260C		5/15/15 18:15	DD	A
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260C		5/15/15 18:15	DD	A
Dibromofluoromethane (S)	95.5		%	78 - 116	SW846 8260C		5/15/15 18:15	DD	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C		5/15/15 18:15	DD	A

SUBCONTRACTED ANALYSIS

Subcontracted Analysis	See attached				Subcontract		5/15/15 17:00	SUB	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129012** Date Collected: 5/11/2015 18:30 Matrix: Water

Sample ID: **TB-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	6.3J	J	ug/L	10.0	3.1	SW846 8260C		5/15/15 14:14	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:14	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:14	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:14	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 14:14	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 14:14	DD	A
2-Butanone	4.4J	J	ug/L	10.0	1.8	SW846 8260C		5/15/15 14:14	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:14	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:14	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 14:14	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 14:14	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 14:14	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:14	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:14	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 14:14	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:14	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 14:14	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 14:14	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:14	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:14	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:14	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:14	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:14	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:14	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:14	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:14	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:14	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 14:14	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 14:14	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:14	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 14:14	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 14:14	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 14:14	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 14:14	DD	A

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070129 TMM032|112IC06247

Lab ID: **2070129012** Date Collected: 5/11/2015 18:30 Matrix: Water

Sample ID: **TB-051115** Date Received: 5/11/2015 18:30

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/15/15 14:14	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 14:14	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:14	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 14:14	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/15/15 14:14	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:14	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/15/15 14:14	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/15/15 14:14	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 14:14	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:14	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 14:14	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:14	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/15/15 14:14	DD	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97		%	62 - 133	SW846 8260C		5/15/15 14:14	DD	A
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260C		5/15/15 14:14	DD	A
Dibromofluoromethane (S)	91.5		%	78 - 116	SW846 8260C		5/15/15 14:14	DD	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260C		5/15/15 14:14	DD	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1513347
Client: ALS Environmental
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **2070129 007** | Sampling Site: NA | Collected: 05/11/2015
Lab ID: 1513347001 | Media: 250 mL Nalgene | Received: 05/13/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 16:22 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	ND	0.060	0.20	1	U

Sample ID: **2070129 008** | Sampling Site: NA | Collected: 05/11/2015
Lab ID: 1513347002 | Media: 250 mL Nalgene | Received: 05/13/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 16:41 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	**3.6**	0.060	0.20	1	

Sample ID: **2070129 011** | Sampling Site: NA | Collected: 05/11/2015
Lab ID: 1513347003 | Media: 250 mL Nalgene | Received: 05/13/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1566 (HBN: 148781) | **Percent Solid:** NA
Analyzed: 05/15/2015 17:00 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Perchlorate	0.14	0.060	0.20	1	J

Comments

Quality Control: EPA 6850 - (HBN: 148781)

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/19/2015 08:05	/S/ Thomas T. McKay 05/20/2015 09:05

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-032

Sample Management

This report contains the results of the analysis of twelve (12) water samples collected on May 11, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 11, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Three (3) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Six (6) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Samples were analyzed immediately following the initial calibration.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2180033, bromomethane was detected at 0.51J µg/L; carbon disulfide was detected at 0.39J µg/L; 1,4-dichlorobenzene was detected at 0.31J µg/L.
- In 2181443, chlorobenzene was detected at 0.25J µg/L.

Surrogates. Recoveries were within control limits; except as follows:

- In sample NRC-MW-96A-051115 (2070129007), 4-bromofluorobenzene was recovered above the control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Two (2) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.0009 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Four (4) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2070129010 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/8/2015

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1513347

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1566 (148781)

General Set Information: There were nine field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 447081) was less than 1/2 the CRDL. The recovery for the LCS (447082) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1512733001 (Client ID: 2068842 004). The percent recovery for the MS analysis failed QC acceptance criteria. The relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 06MAYP-02/03/07/10/17/20.

Thomas Bosch — May19, 2015
Thomas Bosch — Date

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM DM

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE _

2070129

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech, 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-528-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 0

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other ____

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP	GC/MS SVOAs ◦ 8270 ◦ 625	GC VOAs ◦ 8021 ◦ 601/602	PESTICIDES ◦ 8081 ◦ 608	PCBs ◦ 8082 ◦ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	1,4 Dioxane	Perchlorate	REMARKS/ ALTERNATE DESCRIPTION
1	MRC-MW-60B-051115	[redacted]	5/11/15	0855	Aq	1			X							
2	MRC-MW-81B-051115	[redacted]		0935		1			X							
3	MRC-MW-27A-051115	[redacted]		1015		1			X							
4	MRC-MW-27B-051115	[redacted]		1040		1			X							
5	MRC-MW-34B-051115	[redacted]		1120		1			X							
6	MRC-MW-72B-051115	[redacted]		1145		1			X							
7	MRC-MW-96A-051115	[redacted]		1011		7	X					X		X	X	
8	MRC-MW-96B-051115	[redacted]		1124		7	X					X		X	X	
9	MRC-MW-02A-051115	[redacted]		1347		4	X					X				
10	MRC-Dupos-051115	[redacted]		0000		4	X					X				
11	MRC-MW-74A-051105	[redacted]		1512		4	X								X	
12	SPECIAL INSTRUCTIONS/COMMENTS TB-051115			—		2	X									

Metals * ALL SAMPLES GO TO MIDDLETOWN, PA LAB

AJ 5/12/15 0837

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

	Y	N	Initials
Custody Seals Present?		✓	AJ
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			✓

Tracking #:

Cooler Temp: 1 °C

Cooler #:

Therm ID: TT1291

Ship Carrier: FedEx UPS DHL ____

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

____ 1 day ____ 2 day ____ 3 day ____ 4 day ____ 5 day

STANDARD

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION

PO #

BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Walt R	Signature: Jerome Williams	Signature: Jerome Williams	Signature: [signature]	Signature: [signature]	Signature: Sam Schmitt
Printed Name: Walt Ryan	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name: HARCON P	Printed Name: HARCON P	Printed Name: Sam Schmitt
Firm: TT INC	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5-11-15 / 1545	Date/Time: 5/11/15 1548	Date/Time: 5/11/15	Date/Time: 5/11 1616	Date/Time: ~~1616~~ 1830HP	Date/Time: 5/11 1830

Distribution: White - Lab Copy; Yellow - Return to Originator

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13

14348/1

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Environmental • Industrial Hygiene • Field Services

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #:	1 of 1
ALSI Quote #:	

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT [ ] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [X] -Y Debra.Musser@alsglobal.com

Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)	Enter Number of Containers Per Sample or Field Results Below.
2070129 007	5/11/15	1011	C	W				X	
2070129 008	5/11/15	1124	C	W				X	
2070129 011	5/11/15	1512	C	W				X	

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?	[ ]	[ ]
(if present) Seals Intact?	[ ]	[ ]
Received on Ice?	[ ]	[ ]
COC/Labels Agree?	[ ]	[ ]
Cont. in Good Cond.?	[ ]	[ ]
Correct Containers?	[ ]	[ ]
Correct Sample Volumes?	[ ]	[ ]
Correct Preservation?	[ ]	[ ]

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

Subcontract: ALS Salt Lake City

Level IV Package Needed

TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments: Due 5/19/15

Logged By (initials/date/time)

Reviewed By (initials/date/time)

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	5/12/15	1530	2	05/13/15	09:00
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ] DOD [ ]

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type= ADR/SEDD

State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: 2070129	Split:	Workorder ID: 1513347	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental		Account: 8001	Type: 250Poly	
Comments:			Preservatives	
			COOL	
			Containers	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850
1	05/11/2015 10:11	2070129 007	1513347001		Water	A	1	A
2	05/11/2015 11:24	2070129 008	1513347002		Water	A	1	A
3	05/11/2015 15:12	2070129 011	1513347003		Water	A	1	A
4								
5								
6								
7								
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/13/2015 09:50	ALS Sample Receiving	Sample Login
Julie Warath 5/13/15 1715		ISC	storage
R.33.1	5.15.15/13:00	T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) 1513347

Client Name: ALS Middletown

Project/Task/Site: PO 2070129

Date/Time of Receipt: 05/13/15 09:30

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 6067	4 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: [signature] (Signature) Thomas Carlson (Printed Name) 05/13/15 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.dot Revised 1/1/15

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2070129 TMM032|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2070129001	MRC-MW-60B-051115	Water	5/11/2015 08:55	5/11/2015 18:30	Collected by Client
2070129002	MRC-MW-81B-051115	Water	5/11/2015 09:35	5/11/2015 18:30	Collected by Client
2070129003	MRC-MW-27A-051115	Water	5/11/2015 10:15	5/11/2015 18:30	Collected by Client
2070129004	MRC-MW-27B-051115	Water	5/11/2015 10:40	5/11/2015 18:30	Collected by Client
2070129005	MRC-MW-34B-051115	Water	5/11/2015 11:20	5/11/2015 18:30	Collected by Client
2070129006	MRC-MW-72B-051115	Water	5/11/2015 11:45	5/11/2015 18:30	Collected by Client
2070129007	MRC-MW-96A-051115	Water	5/11/2015 10:11	5/11/2015 18:30	Collected by Client
2070129008	MRC-MW-96B-051115	Water	5/11/2015 11:24	5/11/2015 18:30	Collected by Client
2070129009	MRC-MW-02A-051115	Water	5/11/2015 13:47	5/11/2015 18:30	Collected by Client
2070129010	MRC-DUP05-051115	Water	5/11/2015 00:00	5/11/2015 18:30	Collected by Client
2070129011	MRC-MW-74A-051115	Water	5/11/2015 15:12	5/11/2015 18:30	Collected by Client
2070129012	TB-051115	Water	5/11/2015 18:30	5/11/2015 18:30	Collected by Client

Volatile Organics by 8260C Summary Forms

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 315051400.D BFB Injection Date: 5/14/2015

Instrument ID: ms03.i BFB Injection Time: 09:42

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.4
75	30.0 - 60.0% of mass 95	47.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.5(0.5) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.2) 1
176	95.0 - 101.0% of mass 174	88.3 (96.7) 1
177	5.0 - 9.0% of mass 176	5.9 (6.7) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	315051403.D	5/14/2015	10:52
1234	1234	315051404.D	5/14/2015	11:14
1235	1235	315051405.D	5/14/2015	11:36
1236	1236	315051406.D	5/14/2015	11:58
1237	1237	315051407.D	5/14/2015	12:20
1238	1238	315051408.D	5/14/2015	12:42
1239	1239	315051409.D	5/14/2015	13:04
2177980(LCS)	2177980	315051413A.D	5/14/2015	14:31

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 315051500.D BFB Injection Date: 5/15/2015

Instrument ID: ms03.i BFB Injection Time: 11:17

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.2
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.6(0.6) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.1) 1
176	95.0 - 101.0% of mass 174	89.3 (97.8) 1
177	5.0 - 9.0% of mass 176	5.6 (6.3) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	315051501.D	5/15/2015	11:47
2178404(MB)	2178404	315051503.D	5/15/2015	12:46
2178405(LCS)	2178405	315051504.D	5/15/2015	13:08
TB-051115	2070129012	315051507.D	5/15/2015	14:14
MRC-MW-96A-051115	2070129007	315051514.D	5/15/2015	16:47
MRC-MW-96B-051115	2070129008	315051515.D	5/15/2015	17:09
MRC-MW-74A-051115	2070129011	315051518.D	5/15/2015	18:15

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 15051950.D BFB Injection Date: 5/19/2015

Instrument ID: ms15.i BFB Injection Time: 17:56

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	48.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	92.7
175	5.0 - 9.0% of mass 174	6.6 (7.1) 1
176	95.0 - 101.0% of mass 174	88.4 (95.3) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15051953.D	5/19/2015	18:52
1234	1234	15051954.D	5/19/2015	19:10
1235	1235	15051955.D	5/19/2015	19:27
1236	1236	15051956.D	5/19/2015	19:44
1237	1237	15051957.D	5/19/2015	20:01
1238	1238	15051958.D	5/19/2015	20:18
1239	1239	15051959.D	5/19/2015	20:35
2180033(MB)	2180033	15051963.D	5/19/2015	21:44
2180034(LCS)	2180034	15051964.D	5/19/2015	22:01
MRC-MW-02A-051115	2070129009	15051966.D	5/19/2015	22:36
MRC-DUP05-051115	2070129010	15051967.D	5/19/2015	22:53
MRC-MW-96B-051115-DL5	2070129008	15051973.D	5/20/2015	00:36
MRC-MW-96A-051115-DL200	2070129007	15051975.D	5/20/2015	01:10

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 15052150.D BFB Injection Date: 5/21/2015

Instrument ID: ms15.i BFB Injection Time: 19:16

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.6
75	30.0 - 60.0% of mass 95	46.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	79.2
175	5.0 - 9.0% of mass 174	5.9 (7.4) 1
176	95.0 - 101.0% of mass 174	75.4 (95.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15052152.D	5/21/2015	19:52
2181443(MB)	2181443	15052155.D	5/21/2015	20:59
2181444(LCS)	2181444	15052156.D	5/21/2015	21:16
MRC-MW-96A-051115-DL1000	2070129007	15052182.D	5/22/2015	04:42

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3645	18882	69233	190333	414365	L
Acrolein	0.02564	0.02735	0.02734	0.02954	0.03083	A
Acrylonitrile	0.05340	0.05544	0.05621	0.05960	0.06149	A
Acetonitrile	0.02110	0.01947	0.01689	0.01738	0.01793	A
tert-Amyl Ethylether	12773	74622	326547	965729	2212322	L
tert-Amyl methyl ether	15291	93569	412141	1177326	2631483	L
tert-Amyl Alcohol	1731	10993	47672	150815	346185	Q
Benzene	0.76184	0.79039	0.77045	0.76998	0.79886	A
Benzyl Chloride	398	4029	25868	115250	319198	Q
Bromobenzene	0.61313	0.62139	0.63881	0.66498	0.68157	A
Bromochloromethane	0.09153	0.10275	0.10066	0.10047	0.10372	A
Bromodichloromethane	6212	38217	183949	544640	1251758	L
Bromoform *	1633	11986	65084	227734	569801	Q
Bromomethane	9797	35319	121725	303696	661317	L
2-Butanone	0.02188	0.02073	0.02254	0.02390	0.02425	A
tert.- Butyl Alcohol	0.01396	0.01443	0.01274	0.01412	0.01546	A
tert-Butylbenzene	0.40310	0.43700	0.49748	0.51264	0.53893	A
n-Butylbenzene	3745	25771	150608	433957	1014121	L
sec-Butylbenzene	21057	151642	784728	2179564	4811365	L
Carbon Disulfide	14541	77503	357638	1060387	2543667	Q
Carbon Tetrachloride	5270	33342	166478	481308	1145041	L
Chloroacetonitrile	368	4020	18821	57347	127671	L
Chlorobenzene *	1.54161	1.54722	1.52836	1.53129	1.60381	A
1-Chlorobutane	0.17164	0.16281	0.16243	0.15609	0.16362	A
Chlorodibromomethane	3701	25731	136746	424770	984536	Q
Chloroethane	0.18207	0.19051	0.18344	0.16664	0.16174	A
2-Chloroethylvinyl ether	611	5690	32062	144865	381297	Q
Chloroform **	24606	87202	326545	860343	1880332	L
1-Chlorohexane	8507	51493	253696	722169	1684157	L
Chloromethane *	0.20194	0.19734	0.18999	0.17860	0.18833	A
Chloroprene	0.19613	0.22764	0.23294	0.23179	0.24830	A
3-Chloro-1-propene	0.16378	0.16533	0.17166	0.17033	0.17347	A
o-Chlorotoluene	1.49598	1.70792	1.81564	1.88697	1.94044	A
p-Chlorotoluene	1.39042	1.59241	1.69153	1.76492	1.80063	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.25075	0.27800	0.30081	0.29970	0.32467	A
1,2-Dibromo-3-Chloropropane	385	3034	15296	54465	132631	Q
1,2-Dibromoethane	5575	32597	150192	423436	930198	L
Dibromomethane	0.09985	0.10226	0.10619	0.10600	0.11147	A
trans-1,4-Dichloro-2-butene	784	5040	25757	88665	210562	Q
1,2-Dichlorobenzene	0.90561	0.97571	0.98840	1.03109	1.05534	A
1,3-Dichlorobenzene	1.05126	1.08789	1.09471	1.13564	1.16977	A
1,4-Dichlorobenzene	1.13796	1.13643	1.11935	1.15355	1.18665	A
Dichlorodifluoromethane	0.25489	0.27952	0.25910	0.24307	0.24970	A
1,1-Dichloroethane *	0.30670	0.31352	0.31982	0.31204	0.33012	A
1,2-Dichloroethene, Total	0.22496	0.23166	0.22844	0.22514	0.23635	A
1,2-Dichloroethane	0.22908	0.23384	0.22768	0.22277	0.22222	A
1,1-Dichloroethene **	0.23646	0.25009	0.23528	0.22471	0.24125	A
cis-1,2-Dichloroethene	0.22617	0.23284	0.22856	0.22506	0.23738	A
trans-1,2-Dichloroethene	0.22375	0.23047	0.22832	0.22522	0.23532	A
Dichlorofluoromethane	0.46454	0.42602	0.40182	0.36431	0.35661	A
1,1-Dichloro-2-Propanone	266	2264	11453	41104	96731	Q
2,2-Dichloropropane	0.20384	0.21077	0.22160	0.22566	0.24050	A
1,3-Dichloropropane	0.72192	0.76367	0.75853	0.77252	0.78876	A
1,2-Dichloropropane **	0.18984	0.17872	0.18410	0.18580	0.19327	A
1,1-Dichloropropene	0.22908	0.25939	0.26386	0.25801	0.27510	A
cis-1,3-Dichloropropene	6438	44404	230574	700770	1637638	Q
trans-1,3-Dichloropropene	4993	38666	203324	621214	1432395	Q
1,3-Dichloropropene, Total	11431	83070	433898	1321984	3070033	L
Diisobutylene	51783	113435	422759	1122643	2590079	L
Diisopropyl ether	0.41805	0.45278	0.48355	0.48790	0.52575	A
1,4-Dioxane	1818	11355	50492	143123	312920	L
Ethyl Acetate	0.13117	0.12113	0.13167	0.13852	0.14280	A
Ethyl ether	0.13501	0.14910	0.11764	0.11433	0.12530	A
Ethyl Methacrylate	6140	41782	204578	629726	1410865	Q
Ethyl tert-butyl ether	0.42585	0.45730	0.48034	0.50338	0.53871	A
Ethylbenzene **	0.71457	0.78204	0.81960	0.83836	0.88544	A
Freon 113	0.16542	0.16877	0.17109	0.16304	0.17347	A
Heptane	3382	20697	120263	306543	761774	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	2369	11892	68493	191107	440630	Q
Hexachloroethane	1616	10839	63591	213573	549211	Q
Hexane	0.26749	0.27860	0.32395	0.30572	0.33465	A
2-Hexanone	14676	93581	461292	1358303	2931600	L
Iodomethane	1350	9861	67898	205634	472384	Q
Isobutyl alcohol	2929	11125	57350	183575	407548	Q
Isopropyl Alcohol	0.01012	0.00787	0.00819	0.00866	0.00920	A
Isopropylbenzene	1.89417	2.26300	2.48812	2.59506	2.70319	A
p-Isopropyltoluene	4434	33110	177645	518799	1175390	L
Methyl acetate	0.02751	0.03057	0.02879	0.02980	0.03191	A
Methyl acrylate	5331	29375	128722	371931	853542	L
Methacrylonitrile	2806	16067	66755	193112	425978	L
Methyl cyclohexane	0.69369	0.74546	0.85028	0.87509	0.96665	A
Methyl methacrylate	4409	23243	107116	321640	726532	L
Methyl t-Butyl Ether	0.46602	0.44697	0.45706	0.46668	0.49048	A
4-Methyl-2-Pentanone(MIBK)	23112	146483	690905	2015657	4339252	L
Methylene Chloride	21868	59839	193670	483204	1080199	Q
Naphthalene	2242	29060	186395	760357	1844284	Q
Nitrobenzene	70.00000	2325	15240	77907	291154	Q
2-Nitropropane	3300	19876	115502	398010	922192	Q
Octane	2289	12648	87626	247160	570715	L
Pentachloroethane	645	4388	22149	61549	138320	L
Pentane	0.14174	0.13206	0.13520	0.12112	0.11977	A
n-Propanol	0.01199	0.01023	0.00961	0.00934	0.00943	A
Propionitrile	0.02051	0.02421	0.02300	0.02426	0.02492	A
n-Propylbenzene	6800	45499	233250	661747	1491141	L
Styrene	14661	105027	513755	1490129	3338505	L
1,1,1,2-Tetrachloroethane	5027	33386	159187	462204	1038673	L
1,1,2,2-Tetrachloroethane *	0.46440	0.51384	0.52231	0.55596	0.56294	A
Tetrachloroethene	0.56687	0.56909	0.54267	0.54287	0.57246	A
Tetrahydrofuran	0.04120	0.04226	0.04110	0.04436	0.04602	A
Toluene **	1.20153	1.26325	1.30673	1.33623	1.39657	A
Total Xylenes	0.78815	0.87556	0.95264	0.98620	1.04162	A
1,2,3-Trichlorobenzene	1735	16474	83143	273212	624153	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	2962	25224	131764	410630	960017	L
1,1,1-Trichloroethane	0.23095	0.24671	0.26944	0.26003	0.28252	A
1,1,2-Trichloroethane	0.38051	0.35869	0.36844	0.36947	0.38451	A
Trichloroethene	0.20763	0.20252	0.19883	0.20524	0.21543	A
Trichlorofluoromethane	0.35579	0.41219	0.39182	0.35758	0.35889	A
1,2,3-Trichloropropane	0.19182	0.17917	0.17938	0.18802	0.18678	A
1,2,4-Trimethylbenzene	16774	124847	621316	1759331	3842840	L
1,3,5-Trimethylbenzene	17763	126584	634122	1774661	3909923	L
Vinyl Acetate	607	6004	28448	95481	229728	Q
Vinyl Chloride **	0.25270	0.27931	0.26717	0.24977	0.25259	A
o-Xylene	12184	67368	324353	916999	2060128	L
mp-Xylene	0.79919	0.91357	0.97775	1.00588	1.05877	A
4-Bromofluorobenzene	7218	41921	197765	546930	1238831	L
Dibromofluoromethane	0.14487	0.16405	0.17407	0.17669	0.18637	A
1,2-Dichloroethane-d4	0.17441	0.18564	0.18090	0.18022	0.18452	A
Toluene-d8	1.63574	1.80848	1.88881	1.91234	2.02297	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	832273	2135		L	0.000000	68.526894		0.99939
Acrolein	0.03008	0.02110		A		0.027410		12.13419
Acrylonitrile	0.05878	0.04770		A		0.056090		8.19667
Acetonitrile	0.01709	0.02298		A		0.018980		12.22888
tert-Amyl Ethylether	4815720	5256		L	0.000000	2.423480		0.99874
tert-Amyl methyl ether	5674688	6631		L	0.000000	2.049050		0.99940
tert-Amyl Alcohol	719667	755		Q	0.000000	0.012100	0.000010	0.99944
Benzene	0.79415	0.71082		A		0.770930		3.88947
Benzyl Chloride	770897	73.00000		Q	0.000000	0.123380	0.010840	0.99849
Bromobenzene	0.69090	0.51353		A		0.632050		9.48509
Bromochloromethane	0.10871	0.09087		A		0.099820		6.50519
Bromodichloromethane	2746119	2698		L	0.000000	4.258560		0.99843
Bromoform *	1281742	523		Q	0.000000	0.253540	0.010710	0.99916
Bromomethane	1345361	4832		L	0.000000	8.498350		0.99945
2-Butanone	0.02364	0.01779		A		0.022100		10.27919
tert.- Butyl Alcohol	0.01504	0.01183		A		0.013940		9.10400
tert-Butylbenzene	0.54964	0.40799		A		0.478110		12.84093
n-Butylbenzene	2179112	2094		L	0.000000	1.839270		0.99852
sec-Butylbenzene	9788039	11241		L	0.000000	0.402810		0.99979
Carbon Disulfide	5617948	6837		Q	0.000000	0.416880	0.010740	0.99958
Carbon Tetrachloride	2508398	2320		L	0.000000	4.667720		0.99791
Chloroacetonitrile	252121	201		L	0.000000	83.069862		0.99925
Chlorobenzene *	1.61662	1.44241		A		1.544470		3.69986
1-Chlorobutane	0.16385	0.17237		A		0.164690		3.43285
Chlorodibromomethane	2160848	1297		Q	0.000000	0.430370	0.012440	0.99974
Chloroethane	0.14200	0.20908		A		0.176500		12.33135
2-Chloroethylvinyl ether	834309	302		Q	0.000000	0.058300	0.002170	0.99748
Chloroform **	3990408	17372		L	0.000000	2.897240		0.99987
1-Chlorohexane	3567236	4536		L	0.000000	1.196610		0.99856
Chloromethane *	0.18878	0.22323		A		0.195460		7.31413
Chloroprene	0.25687	0.20278		A		0.228070		9.70049
3-Chloro-1-propene	0.16420	0.13452		A		0.163330		8.12301
o-Chlorotoluene	1.92633	1.56343		A		1.762390		10.10926
p-Chlorotoluene	1.77229	1.25616		A		1.609770		13.10560
Cyclohexane	0.33449	0.27531		A		0.294820		9.91755
1,2-Dibromo-3-Chloropropane	289761			Q	0.000000	0.061330	0.001820	0.99906

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	1938095	2221		L	0.000000	2.187030		0.99971
Dibromomethane	0.11043	0.09335		A		0.104220		6.06142
trans-1,4-Dichloro-2-butene	444482	151		Q	0.000000	0.101630	0.001660	0.99912
1,2-Dichlorobenzene	1.06681	0.89444		A		0.988200		6.94931
1,3-Dichlorobenzene	1.17834	0.97480		A		1.098910		6.48705
1,4-Dichlorobenzene	1.21523	1.10904		A		1.151170		3.27878
Dichlorodifluoromethane	0.24727	0.26945		A		0.257570		5.03878
1,1-Dichloroethane *	0.33379	0.28283		A		0.314120		5.38072
1,2-Dichloroethene, Total	0.24096	0.22242		A		0.229990		2.92789
1,2-Dichloroethane	0.21891	0.21341		A		0.223990		3.04346
1,1-Dichloroethene **	0.25057	0.22571		A		0.237720		4.38379
cis-1,2-Dichloroethene	0.24112	0.24544		A		0.233800		3.33514
trans-1,2-Dichloroethene	0.24080	0.19940		A		0.226180		5.83269
Dichlorofluoromethane	0.33477	0.38956		A		0.391090		11.34380
1,1-Dichloro-2-Propanone	200765			Q	-0.004690	0.009320	0.000010	0.99910
2,2-Dichloropropane	0.24627	0.19435		A		0.220430		8.58392
1,3-Dichloropropane	0.78366	0.62698		A		0.745150		7.58382
1,2-Dichloropropane **	0.19657	0.16714		A		0.185060		5.33784
1,1-Dichloropropene	0.28109	0.22463		A		0.255880		8.41311
cis-1,3-Dichloropropene	3573920	2663		Q	0.000000	0.717410	0.019750	0.99971
trans-1,3-Dichloropropene	3057632	2184		Q	0.000000	0.643050	0.012520	0.99967
1,3-Dichloropropene, Total	6631552	4847		L	0.000000	1.293600		0.99773
Diisobutylene	5495046	45414		L	0.000000	2.109840		0.99928
Diisopropyl ether	0.52850	0.36929		A		0.466550		12.40276
1,4-Dioxane	629652	786		L	0.000000	453		0.99945
Ethyl Acetate	0.14280	0.10731		A		0.130770		9.84097
Ethyl ether	0.13124	0.10524		A		0.125410		11.63488
Ethyl Methacrylate	2948531	2569		Q	0.000000	0.653510	0.007040	0.99972
Ethyl tert-butyl ether	0.54780	0.36780		A		0.474450		13.44419
Ethylbenzene **	0.90567	0.73274		A		0.811200		8.94452
Freon 113	0.17948	0.17264		A		0.170560		3.20025
Heptane	1619383	1762		Q	-0.005110	0.131410	0.001530	0.99913
Hexachlorobutadiene	926129	1676		Q	-0.007130	0.225200	0.001530	0.99974
Hexachloroethane	1285737	735		Q	0.000000	0.232680	0.013970	0.99934
Hexane	0.33938	0.25071		A		0.300070		11.62573
2-Hexanone	5735228	5651		L	0.000000	3.636180		0.99918

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1031133	985		Q	0.000000	0.079700	0.001490	0.99973
Isobutyl alcohol	880621	1141		Q	0.000000	0.007040	0.000000	0.99975
Isopropyl Alcohol	0.00887	0.01036		A		0.009040		10.30113
Isopropylbenzene	2.62023	2.01212		A		2.367980		13.40043
p-Isopropyltoluene	2518453	1896		L	0.000000	1.588020		0.99905
Methyl acetate	0.03103	0.03248		A		0.030300		5.76385
Methyl acrylate	1770587	2071		L	0.000000	6.515500		0.99949
Methacrylonitrile	875445	970		L	0.000000	13.119880		0.99976
Methyl cyclohexane	1.01234	0.71229		A		0.836540		14.93427
Methyl methacrylate	1490680	1619		L	0.000000	7.714070		0.99950
Methyl t-Butyl Ether	0.49727	0.42312		A		0.463940		5.44471
4-Methyl-2-Pentanone(MIBK)	8332224	9246		L	0.000000	2.490420		0.99855
Methylene Chloride	2310548	15655		Q	0.000000	0.192120	0.001260	0.99979
Naphthalene	3880317	701		Q	0.000000	0.872360	0.016860	0.99834
Nitrobenzene	899982			Q	-0.014560	0.007170	0.000240	0.99914
2-Nitropropane	1878315	1212		Q	0.000000	0.084770	0.000140	0.99902
Octane	1205408	1052		L	0.000000	3.537270		0.99871
Pentachloroethane	294903	215		L	0.000000	13.535010		0.99941
Pentane	0.11131	0.13691		A		0.128300		8.59391
n-Propanol	0.00919	0.00864		A		0.009780		11.13236
Propionitrile	0.02406	0.02022		A		0.023030		8.27725
n-Propylbenzene	3151005	3478		L	0.000000	1.264430		0.99949
Styrene	6912822	6733		L	0.000000	0.573440		0.99969
1,1,1,2-Tetrachloroethane	2199347	2286		L	0.000000	1.937380		0.99909
1,1,2,2-Tetrachloroethane *	0.54616	0.39349		A		0.508450		11.91623
Tetrachloroethene	0.59912	0.63371		A		0.575260		5.59395
Tetrahydrofuran	0.04424	0.03361		A		0.041830		9.68766
Toluene **	1.42055	1.16378		A		1.298380		7.36076
Total Xylenes	1.05536	0.75752		A		0.922430		12.84838
1,2,3-Trichlorobenzene	1285783	704		L	0.000000	3.084920		0.99905
1,2,4-Trichlorobenzene	2053646	1279		L	0.000000	1.950550		0.99836
1,1,1-Trichloroethane	0.28972	0.20043		A		0.254260		12.24638
1,1,2-Trichloroethane	0.38821	0.26778		A		0.359660		11.62243
Trichloroethene	0.22284	0.27797		A		0.218640		12.52648
Trichlorofluoromethane	0.34830	0.41862		A		0.377600		7.77085
1,2,3-Trichloropropane	0.18098	0.13526		A		0.177350		10.80763

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	7920871	8401		L	0.000000	0.499150		0.99989
1,3,5-Trimethylbenzene	8069300	8829		L	0.000000	0.490300		0.99987
Vinyl Acetate	512550	109		Q	0.000000	0.036890	0.001150	0.99942
Vinyl Chloride **	0.24305	0.28472		A		0.261330		6.09742
o-Xylene	4343040	5363		L	0.000000	0.979880		0.99926
mp-Xylene	1.06816	0.80184		A		0.946450		11.86152
4-Bromofluorobenzene	2575228	3455		L	0.000000	1.541110		0.99969
Dibromofluoromethane	0.18672	0.12421		A		0.165280		14.01022
1,2-Dichloroethane-d4	0.18059	0.17710		A		0.180480		2.16351
Toluene-d8	2.01020	1.50913		A		1.826810		10.50663

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3115	12365	49853	134143	276003	L
Acrolein	0.02972	0.02957	0.02954	0.03038	0.03047	A
Acrylonitrile	0.08488	0.07199	0.07861	0.08049	0.07933	A
Acetonitrile	4425	17844	69326	188478	300736	Q
tert-Amyl Ethylether	9358	51721	251711	711597	1608239	L
tert-Amyl methyl ether	0.51419	0.50109	0.59173	0.61758	0.65041	A
tert-Amyl Alcohol	1545	9368	37420	112845	250393	L
Benzene	1.27694	1.26732	1.28484	1.24368	1.22049	A
Benzyl Chloride	834	6192	33005	118018	312515	Q
Bromobenzene	0.84079	0.89661	0.98859	0.97450	0.97760	A
Bromochloromethane	0.22690	0.20281	0.19716	0.19395	0.18988	A
Bromodichloromethane	0.39608	0.38566	0.41380	0.43297	0.44872	A
Bromoform *	0.44206	0.36305	0.40163	0.44578	0.48867	A
Bromomethane	9332	38368	134592	299912	612357	L
2-Butanone	0.03548	0.03196	0.03110	0.03238	0.03596	A
tert.- Butyl Alcohol	0.01799	0.01738	0.01766	0.01849	0.01911	A
tert-Butylbenzene	4210	35724	204082	583061	1226871	L
n-Butylbenzene	4251	32375	204916	604515	1292790	L
sec-Butylbenzene	21334	179122	1024862	2860265	6050064	L
Carbon Disulfide	0.56794	0.50611	0.52190	0.57244	0.60701	A
Carbon Tetrachloride	0.48107	0.46186	0.48045	0.49463	0.48833	A
Chloroacetonitrile	690	3291	19445	55845	120463	L
Chlorobenzene *	2.63237	2.44519	2.41629	2.36315	2.35133	A
1-Chlorobutane	0.24916	0.25336	0.25827	0.25773	0.25037	A
Chlorodibromomethane	0.72274	0.69932	0.75810	0.83913	0.89607	A
Chloroethane	0.23312	0.19132	0.16812	0.16680	0.16982	A
2-Chloroethylvinyl ether		194	1147	4150	11064	L
Chloroform **	34082	120948	452230	1131734	2282175	L
1-Chlorohexane	7140	42958	231416	685474	1494181	L
Chloromethane *	0.42756	0.36516	0.34107	0.32891	0.32587	A
Chloroprene	0.39427	0.37519	0.40739	0.42355	0.42113	A
3-Chloro-1-propene	7451	30544	131378	347064	731586	L
o-Chlorotoluene	1.96066	2.19002	2.58690	2.64845	2.72309	A
p-Chlorotoluene	1.80202	1.96606	2.39720	2.46143	2.52331	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.39402	0.39397	0.44707	0.45794	0.44351	A
1,2-Dibromo-3-Chloropropane	0.12788	0.08870	0.09907	0.11046	0.12063	A
1,2-Dibromoethane	0.66563	0.64093	0.64736	0.67777	0.70891	A
Dibromomethane	0.23730	0.20183	0.20358	0.20070	0.20138	A
trans-1,4-Dichloro-2-butene	1285	7217	43883	129597	282167	L
1,2-Dichlorobenzene	1.70345	1.61897	1.73793	1.73861	1.76151	A
1,3-Dichlorobenzene	1.75375	1.77202	1.86616	1.81477	1.83107	A
1,4-Dichlorobenzene	1.99683	1.87531	1.90039	1.84388	1.84730	A
Dichlorodifluoromethane	0.64565	0.58608	0.54864	0.53746	0.51846	A
1,1-Dichloroethane *	0.61713	0.52204	0.53544	0.52066	0.51047	A
1,2-Dichloroethene, Total	22475	114510	468065	1225791	2559299	L
1,2-Dichloroethane	0.52285	0.46098	0.45963	0.44240	0.43717	A
1,1-Dichloroethene **	0.42133	0.35430	0.34750	0.34640	0.34301	A
cis-1,2-Dichloroethene	0.41312	0.38834	0.38995	0.39209	0.39475	A
trans-1,2-Dichloroethene	0.36877	0.33961	0.32180	0.31488	0.31358	A
Dichlorofluoromethane	0.57486	0.52133	0.48741	0.48687	0.48296	A
1,1-Dichloro-2-Propanone	353	3518	17184	51582	110723	L
2,2-Dichloropropane	0.40606	0.37876	0.38145	0.39192	0.40443	A
1,3-Dichloropropane	1.17048	1.08399	1.09515	1.11269	1.14500	A
1,2-Dichloropropane **	0.28120	0.26864	0.27794	0.27934	0.27981	A
1,1-Dichloropropene	0.39190	0.41076	0.43693	0.44204	0.43620	A
cis-1,3-Dichloropropene	9239	49640	252858	761321	1735847	Q
trans-1,3-Dichloropropene	7210	45092	247474	714181	1582448	L
1,3-Dichloropropene, Total	16449	94732	500332	1475502	3318295	L
Diisobutylene	36774	101793	373036	970158	2018678	L
Diisopropyl ether	0.72247	0.60878	0.63018	0.65152	0.66260	A
1,4-Dioxane	1783	9356	48744	146938	318038	L
Ethyl Acetate	0.19534	0.17045	0.18467	0.19081	0.19355	A
Ethyl ether	0.15565	0.13953	0.13942	0.14466	0.14833	A
Ethyl Methacrylate	5813	36086	202648	620998	1361074	L
Ethyl tert-butyl ether	0.66750	0.63733	0.66933	0.69588	0.72425	A
Ethylbenzene **	0.96455	1.10340	1.19698	1.21734	1.21229	A
Freon 113	0.27967	0.27761	0.26271	0.25516	0.24774	A
Heptane	3131	22409	114774	328083	697579	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.50552	0.49797	0.52502	0.53916	0.55995	A
Hexachloroethane	0.42339	0.39473	0.46635	0.51053	0.55168	A
Hexane	0.36936	0.33531	0.33149	0.33576	0.33848	A
2-Hexanone	12603	72834	411611	1207505	2501925	L
Iodomethane	1499	8057	62527	248183	586024	L
Isobutyl alcohol	2681	13208	77882	226490	483970	L
Isopropyl Alcohol	2560	8009	28472	84066	180476	L
Isopropylbenzene	24097	163674	940868	2729302	5870170	L
p-Isopropyltoluene	4573	37518	233101	682067	1449054	L
Methyl acetate	1266	6346	23518	65043	133312	L
Methyl acrylate	0.17186	0.18016	0.20137	0.21049	0.21701	A
Methacrylonitrile	3257	17132	77797	193734	414159	L
Methyl cyclohexane	0.99997	0.95124	1.07710	1.12481	1.10934	A
Methyl methacrylate	3682	17866	92060	279510	645683	L
Methyl t-Butyl Ether	0.73966	0.62343	0.60801	0.62341	0.64108	A
4-Methyl-2-Pentanone(MIBK)	0.33818	0.35562	0.42467	0.46078	0.45541	A
Methylene Chloride	15408	51231	187554	461123	950532	Q
Naphthalene	10062	58023	359528	1492388	3559426	Q
Nitrobenzene	2413	10052	48164	179911	531680	Q
2-Nitropropane	5832	27005	151017	486216	1081589	L
Octane	2424	14873	97745	285730	622364	L
Pentachloroethane	0.67422	0.58192	0.60263	0.61088	0.62574	A
Pentane	0.16375	0.14555	0.13161	0.12932	0.12887	A
n-Propanol	0.02151	0.01843	0.01833	0.01786	0.01728	A
Propionitrile	0.04100	0.03073	0.03237	0.03205	0.03099	A
n-Propylbenzene	6248	48257	281351	780924	1631648	L
Styrene	14324	101739	639631	1775739	3812796	L
1,1,1,2-Tetrachloroethane	0.89983	0.83502	0.84340	0.86031	0.88491	A
1,1,2,2-Tetrachloroethane *	0.89525	0.76352	0.75516	0.73621	0.73273	A
Tetrachloroethene	1.00831	0.94954	0.88261	0.82744	0.80475	A
Tetrahydrofuran	0.04942	0.04534	0.05120	0.05530	0.05439	A
Toluene **	1.62322	1.65959	1.90250	1.93951	1.94551	A
Total Xylenes	1.04318	1.15782	1.36349	1.46927	1.49842	A
1,2,3-Trichlorobenzene	7550	39360	249431	786071	1696605	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	8497	47878	266939	877655	2015776	Q
1,1,1-Trichloroethane	0.53276	0.52165	0.53572	0.54452	0.54066	A
1,1,2-Trichloroethane	0.66730	0.59094	0.55589	0.56002	0.54956	A
Trichloroethene	0.41302	0.36320	0.37141	0.35510	0.34478	A
Trichlorofluoromethane	0.76477	0.66376	0.64217	0.62206	0.60276	A
1,2,3-Trichloropropane	0.31186	0.28037	0.27851	0.26730	0.26207	A
1,2,4-Trimethylbenzene	18426	148574	882857	2445783	5240284	L
1,3,5-Trimethylbenzene	17038	146325	873939	2396302	5003116	L
Vinyl Acetate	0.05831	0.05205	0.05968	0.06404	0.06629	A
Vinyl Chloride **	0.30764	0.27842	0.27940	0.28800	0.29627	A
o-Xylene	10610	64845	352052	1041764	2292334	Q
mp-Xylene	1.07289	1.23784	1.42785	1.49798	1.50155	A
4-Bromofluorobenzene	11470	54248	250942	718955	1543783	L
Dibromofluoromethane	15431	60804	239097	618744	1257772	L
1,2-Dichloroethane-d4	19902	73503	257832	646948	1300148	L
Toluene-d8		155131	738419	1992340	4189344	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	588226			L	0.000000	63.630810		0.99960
Acrolein	0.03235	0.03366		A		0.030810		5.15925
Acrylonitrile	0.08190	0.08625		A		0.080490		5.81705
Acetonitrile	806781			Q	0.000000	0.015840	0.000170	0.99301
tert-Amyl Ethylether	3745020	5364		L	0.000000	2.050170		0.99401
tert-Amyl methyl ether	0.71213	0.50937		A		0.585210		13.83360
tert-Amyl Alcohol	598109	677		L	0.000000	64.506287		0.99230
Benzene	1.24626	1.45399		A		1.284790		6.05459
Benzyl Chloride				Q	0.000000	0.101190	0.025850	0.99981
Bromobenzene	0.98820	1.08785		A		0.964880		8.08784
Bromochloromethane	0.17759	0.24372		A		0.204570		11.19128
Bromodichloromethane	0.47525	0.35865		A		0.415870		9.55819
Bromoform *	0.53976	0.49603		A		0.453860		13.20382
Bromomethane	1350144			L	0.000000	5.577270		0.99819
2-Butanone	0.03315			A		0.033340		5.89231
tert.- Butyl Alcohol	0.02067			A		0.018550		6.52528
tert-Butylbenzene	2605843	2355		L	0.000000	1.351060		0.99977
n-Butylbenzene	2743613			L	0.000000	1.284400		0.99951
sec-Butylbenzene	12284888	10498		L	0.000000	0.283470		0.99965
Carbon Disulfide	0.65830	0.62657		A		0.580040		9.46046
Carbon Tetrachloride	0.50626	0.47001		A		0.483230		3.08130
Chloroacetonitrile	278576			L	0.000000	59.085529		0.99581
Chlorobenzene *	2.38884	2.99831		A		2.513640		9.29778
1-Chlorobutane	0.25255	0.32347		A		0.263560		10.10734
Chlorodibromomethane	0.95186	0.66969		A		0.790990		13.46837
Chloroethane	0.16347			A		0.182110		14.76712
2-Chloroethylvinyl ether	50806			L	0.749740	143		0.92638
Chloroform **	4662274	24493		L	0.000000	1.586400		0.99970
1-Chlorohexane	3290797	3247		L	0.000000	0.989980		0.99825
Chloromethane *	0.33724			A		0.354300		10.86143
Chloroprene	0.43544	0.48668		A		0.420520		8.42169
3-Chloro-1-propene	1478765	4279		L	0.000000	5.003750		0.99993
o-Chlorotoluene	2.74137	2.21018		A		2.437240		12.76798
p-Chlorotoluene	2.59094	2.08496		A		2.260850		13.57354
Cyclohexane	0.44042	0.42297		A		0.428560		6.01751
1,2-Dibromo-3-Chloropropane	0.13270	0.10828		A		0.112530		13.95394

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.73686	0.76998		A		0.692490		6.94497
Dibromomethane	0.21005	0.22589		A		0.211530		6.82275
trans-1,4-Dichloro-2-butene	639471	785		L	0.000000	5.601070		0.99738
1,2-Dichlorobenzene	1.79830	1.73935		A		1.728300		3.24700
1,3-Dichlorobenzene	1.85824	1.93292		A		1.832700		3.30825
1,4-Dichlorobenzene	1.84529	2.20493		A		1.930560		6.86371
Dichlorodifluoromethane	0.52613			A		0.560400		8.56753
1,1-Dichloroethane *		0.64618		A		0.558650		10.35265
1,2-Dichloroethene, Total	5479946	12653		L	0.000000	2.736730		0.99950
1,2-Dichloroethane	0.44077	0.49703		A		0.465830		6.94750
1,1-Dichloroethene **	0.35410	0.45973		A		0.375200		12.30473
cis-1,2-Dichloroethene	0.41278	0.42900		A		0.402860		3.85402
trans-1,2-Dichloroethene	0.32532	0.43867		A		0.346090		13.01861
Dichlorofluoromethane	0.50007	0.64268		A		0.528030		11.34755
1,1-Dichloro-2-Propanone	246176			L	0.000000	66.266380		0.99788
2,2-Dichloropropane	0.43097	0.46178		A		0.407910		7.25525
1,3-Dichloropropane	1.18329	1.18051		A		1.138730		3.64770
1,2-Dichloropropane **	0.29435	0.29549		A		0.282400		3.36185
1,1-Dichloropropene	0.44353	0.46809		A		0.432780		5.68599
cis-1,3-Dichloropropene	3902762	4845		Q	0.000000	1.000530	0.032870	0.99977
trans-1,3-Dichloropropene	3557487	3573		L	0.000000	0.920690		0.99721
1,3-Dichloropropene, Total	7460249	8418		L	0.000000	0.878820		0.99685
Diisobutylene	4231985	31147		L	0.000000	1.762380		0.99976
Diisopropyl ether	0.69067	0.76489		A		0.675870		8.02977
1,4-Dioxane	700477			L	0.000000	270		0.99753
Ethyl Acetate	0.20402	0.22733		A		0.195170		9.00974
Ethyl ether	0.15639	0.16629		A		0.150040		6.61628
Ethyl Methacrylate	3038972	2926		L	0.000000	1.075940		0.99745
Ethyl tert-butyl ether	0.76383	0.69316		A		0.693040		5.98172
Ethylbenzene **	1.22808	1.09998		A		1.146090		8.40516
Freon 113	0.24985	0.31887		A		0.270230		9.20786
Heptane	1458099	1200		L	0.000000	5.122110		0.99965
Hexachlorobutadiene	0.56546	0.65311		A		0.549460		9.51369
Hexachloroethane	0.58476	0.47466		A		0.486590		13.89578
Hexane	0.35532	0.33266		A		0.342620		4.15699
2-Hexanone	5485111	5540		L	0.000000	2.958700		0.99900

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1232633	810		L	0.000000	6.111500		0.99621
Isobutyl alcohol	1073380	2655		L	0.000000	70.581429		0.99774
Isopropyl Alcohol	402404			L	0.000000	94.261971		0.99720
Isopropylbenzene	12022709	13011		L	0.000000	0.290620		0.99966
p-Isopropyltoluene	3079857	2116		L	0.000000	1.144120		0.99962
Methyl acetate	281666	839		L	0.000000	26.521111		0.99977
Methyl acrylate	0.22777	0.20298		A		0.201660		9.80851
Methacrylonitrile	843127	1240		L	0.000000	8.794770		0.99989
Methyl cyclohexane	1.11775	0.81190		A		1.027440		11.22680
Methyl methacrylate	1435644	2004		L	0.000000	5.301240		0.99603
Methyl t-Butyl Ether	0.68991	0.81508		A		0.677230		11.26983
4-Methyl-2-Pentanone(MIBK)	0.46641	0.33182		A		0.404700		14.98581
Methylene Chloride	2023691	11567		Q	0.012800	0.251340	0.002870	0.99995
Naphthalene	8223079	5682		Q	0.000000	1.766300	0.087990	0.99898
Nitrobenzene	1631893	1449		Q	0.000000	0.015790	0.000460	0.99986
2-Nitropropane		2725		L	0.000000	7.253240		0.99573
Octane	1314597	694		L	0.000000	2.453770		0.99930
Pentachloroethane	0.66003	0.79144		A		0.649550		10.82930
Pentane	0.13226			A		0.138560		9.95122
n-Propanol	0.01684			A		0.018380		8.99559
Propionitrile	0.03225	0.03618		A		0.033650		10.99128
n-Propylbenzene	3449417	3178		L	0.000000	1.018900		0.99988
Styrene	8259279	7788		L	0.000000	0.428660		0.99934
1,1,1,2-Tetrachloroethane	0.92388	0.95758		A		0.886420		5.00815
1,1,2,2-Tetrachloroethane *	0.73899	0.94126		A		0.794730		10.83499
Tetrachloroethene	0.79875	1.13841		A		0.915690		13.68329
Tetrahydrofuran	0.05417			A		0.051640		7.35669
Toluene **	1.99234	1.87033		A		1.847570		7.91188
Total Xylenes	1.52811	1.17148		A		1.318820		14.66068
1,2,3-Trichlorobenzene	3728950	3363		Q	0.000000	0.945970	0.017820	0.99978
1,2,4-Trichlorobenzene	4486355	4585		Q	0.000000	1.072580	0.031500	0.99953
1,1,1-Trichloroethane	0.55389	0.67258		A		0.557400		9.28761
1,1,2-Trichloroethane	0.56540	0.58458		A		0.581950		6.96413
Trichloroethene	0.35167	0.43847		A		0.376810		9.35578
Trichlorofluoromethane	0.61275			A		0.651380		9.16288
1,2,3-Trichloropropane	0.26593	0.38029		A		0.292330		14.44028

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	11059386	10614		L	0.000000	0.318090		0.99977
1,3,5-Trimethylbenzene	10550634	9402		L	0.000000	0.332880		0.99990
Vinyl Acetate	0.06798	0.05767		A		0.060860		9.14644
Vinyl Chloride **	0.31640			A		0.294360		5.22809
o-Xylene	4941923	5433		Q	0.000000	1.395210	0.022360	0.99979
mp-Xylene	1.52119	1.26003		A		1.359910		12.63029
4-Bromofluorobenzene		7412		L	0.000000	1.092370		0.99922
Dibromofluoromethane				L	0.000000	2.854140		0.99964
1,2-Dichloroethane-d4	2701740			L	0.000000	2.748500		0.99972
Toluene-d8	8957805			L	0.053370	0.356160		0.99988

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		216		-13.7	100.0	L
Acrolein	0.0274	0.0256			-6.6	100.0	A
Acrylonitrile	0.0561	0.0529			-5.8	100.0	A
Acetonitrile	0.0190	0.0186			-2.2	100.0	A
tert-Amyl Ethylether	50.0000		47.7755		-4.4	100.0	L
tert-Amyl methyl ether	50.0000		46.9220		-6.2	100.0	L
tert-Amyl Alcohol	250		178		-28.8	100.0	L
Benzene	0.7709	0.7784			1.0	100.0	A
Benzyl Chloride	50.0000		47.1823		-5.6	100.0	Q
Bromobenzene	0.6320	0.6501			2.9	100.0	A
Bromochloromethane	0.0998	0.1018			2.0	100.0	A
Bromodichloromethane	50.0000		45.3569		-9.3	100.0	L
Bromoform	50.0000		43.8300	0.100	-12.3	100.0	Q
Bromomethane	50.0000		46.5487		-6.9	100.0	L
2-Butanone	0.0221	0.0202			-8.9	100.0	A
tert.- Butyl Alcohol	0.0139	0.0104			-25.4	100.0	A
tert-Butylbenzene	0.4781	0.4852			1.5	100.0	A
n-Butylbenzene	50.0000		41.1425		-17.7	100.0	L
sec-Butylbenzene	50.0000		45.5705		-8.9	100.0	L
Carbon Disulfide	50.0000		43.4019		-13.2	100.0	L
Carbon Tetrachloride	50.0000		45.3119		-9.4	100.0	L
Chloroacetonitrile	250		201		-19.4	100.0	L
Chlorobenzene	1.5445	1.4958		0.300	-3.2	100.0	A
1-Chlorobutane	0.1647	0.1568			-4.8	100.0	A
Chlorodibromomethane	50.0000		41.7828		-16.4	100.0	L
Chloroethane	0.1765	0.1542			-12.6	100.0	A
2-Chloroethylvinyl ether	50.0000		76.2814		52.6	100.0	Q
Chloroform	50.0000		48.3109		-3.4	20.0	L
1-Chlorohexane	50.0000		42.3941		-15.2	100.0	L
Chloromethane	0.1955	0.1756		0.100	-10.2	100.0	A
Chloroprene	0.2281	0.2355			3.3	100.0	A
3-Chloro-1-propene	0.1633	0.1716			5.1	100.0	A
o-Chlorotoluene	1.7624	1.8116			2.8	100.0	A
p-Chlorotoluene	1.6098	1.7083			6.1	100.0	A
Cyclohexane	0.2948	0.2842			-3.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.6357		-16.7	100.0	Q
1,2-Dibromoethane	50.0000		46.1451		-7.7	100.0	L
Dibromomethane	0.1042	0.1034			-0.8	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		45.4274		-9.1	100.0	L
1,2-Dichlorobenzene	0.9882	0.9840			-0.4	100.0	A
1,3-Dichlorobenzene	1.0989	1.0809			-1.6	100.0	A
1,4-Dichlorobenzene	1.1512	1.1069			-3.8	100.0	A
Dichlorodifluoromethane	0.2576	0.2289			-11.1	100.0	A
1,1-Dichloroethane	0.3141	0.3178		0.100	1.2	100.0	A
1,2-Dichloroethene, Total	0.2300	0.2291			-0.4	100.0	A
1,2-Dichloroethane	0.2240	0.2185			-2.4	100.0	A
1,1-Dichloroethene	0.2377	0.2311			-2.8	20.0	A
cis-1,2-Dichloroethene	0.2338	0.2282			-2.4	100.0	A
trans-1,2-Dichloroethene	0.2262	0.2300			1.7	100.0	A
Dichlorofluoromethane	0.3911	0.3473			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		200		-20.0	100.0	Q
2,2-Dichloropropane	0.2204	0.2232			1.2	100.0	A
1,3-Dichloropropane	0.7452	0.7474			0.3	100.0	A
1,2-Dichloropropane	0.1851	0.1877			1.4	20.0	A
1,1-Dichloropropene	0.2559	0.2575			0.6	100.0	A
cis-1,3-Dichloropropene	50.0000		44.2645		-11.5	100.0	L
trans-1,3-Dichloropropene	50.0000		45.7992		-8.4	100.0	L
1,3-Dichloropropene, Total	100		90.0637		-9.9	100.0	L
Diisobutylene	50.0000		42.6611		-14.7	100.0	L
Diisopropyl ether	0.4665	0.5092			9.1	100.0	A
1,4-Dioxane	1250		571		-54.3	100.0	L
Ethyl Acetate	0.1308	0.1255			-4.1	100.0	A
Ethyl ether	0.1254	0.1206			-3.8	100.0	A
Ethyl Methacrylate	50.0000		44.7337		-10.5	100.0	L
Ethyl tert-butyl ether	0.4744	0.5112			7.7	100.0	A
Ethylbenzene	0.8112	0.7997			-1.4	20.0	A
Freon 113	0.1706	0.1592			-6.7	100.0	A
Heptane	50.0000		39.9487		-20.1	100.0	Q
Hexachlorobutadiene	50.0000		42.2464		-15.5	100.0	Q
Hexachloroethane	50.0000		46.2337		-7.5	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3001	0.2993			-0.3	100.0	A
2-Hexanone	250		223		-10.8	100.0	L
Iodomethane	50.0000		41.4150		-17.2	100.0	Q
Isobutyl alcohol	500		324		-35.2	100.0	L
Isopropyl Alcohol	0.0090	0.0058			-36.1	100.0	A
Isopropylbenzene	2.3680	2.4749			4.5	100.0	A
p-Isopropyltoluene	50.0000		42.7350		-14.5	100.0	L
Methyl acetate	0.0303	0.0273			-9.8	100.0	A
Methyl acrylate	50.0000		44.0285		-11.9	100.0	L
Methacrylonitrile	50.0000		45.2531		-9.5	100.0	L
Methyl cyclohexane	0.8365	0.7992			-4.5	100.0	A
Methyl methacrylate	50.0000		46.0941		-7.8	100.0	L
Methyl t-Butyl Ether	0.4639	0.4661			0.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		232		-7.3	100.0	L
Methylene Chloride	50.0000		52.5174		5.0	100.0	Q
Naphthalene	50.0000		41.2501		-17.5	100.0	L
Nitrobenzene	500		319		-36.3	100.0	Q
2-Nitropropane	250		208		-16.9	100.0	L
Octane	50.0000		34.9468		-30.1	100.0	L
Pentachloroethane	50.0000		45.8760		-8.2	100.0	L
Pentane	0.1283	0.1098			-14.4	100.0	A
n-Propanol	0.0098	0.0091			-6.7	100.0	A
Propionitrile	0.0230	0.0207			-10.3	100.0	A
n-Propylbenzene	50.0000		44.9955		-10.0	100.0	L
Styrene	50.0000		47.4760		-5.0	100.0	L
1,1,1,2-Tetrachloroethane	50.0000		44.6131		-10.8	100.0	L
1,1,2,2-Tetrachloroethane	0.5084	0.5168		0.300	1.6	100.0	A
Tetrachloroethene	0.5753	0.4932			-14.3	100.0	A
Tetrahydrofuran	0.0418	0.0384			-8.2	100.0	A
Toluene	1.2984	1.3164			1.4	20.0	A
Total Xylenes	0.9224	0.9453			2.5	100.0	A
1,2,3-Trichlorobenzene	50.0000		45.6967		-8.6	100.0	L
1,2,4-Trichlorobenzene	50.0000		41.7318		-16.5	100.0	L
1,1,1-Trichloroethane	0.2543	0.2604			2.4	100.0	A
1,1,2-Trichloroethane	0.3597	0.3614			0.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2186	0.2002			-8.4	100.0	A
Trichlorofluoromethane	0.3776	0.3305			-12.5	100.0	A
1,2,3-Trichloropropane	0.1773	0.1714			-3.3	100.0	A
1,2,4-Trimethylbenzene	50.0000		46.8249		-6.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0915		-7.8	100.0	L
Vinyl Acetate	50.0000		50.5007		1.0	100.0	Q
Vinyl Chloride	0.2613	0.2290			-12.4	20.0	A
o-Xylene	50.0000		44.7407		-10.5	100.0	L
mp-Xylene	0.9464	0.9613			1.6	100.0	A
4-Bromofluorobenzene	50.0000		50.5263		1.1	100.0	L
Dibromofluoromethane	0.1653	0.1608			-2.7	100.0	A
1,2-Dichloroethane-d4	0.1805	0.1615			-10.5	100.0	A
Toluene-d8	1.8268	1.8124			-0.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.1	100.0	L
Acrolein	0.0308	0.0299			-2.9	100.0	A
Acrylonitrile	0.0805	0.0758			-5.9	100.0	A
Acetonitrile	250		237		-5.3	100.0	Q
tert-Amyl Ethylether	50.0000		38.9216		-22.2	100.0	L
tert-Amyl methyl ether	0.5852	0.5692			-2.7	100.0	A
tert-Amyl Alcohol	250		186		-25.4	100.0	L
Benzene	1.2848	1.2270			-4.5	100.0	A
Benzyl Chloride	50.0000		48.4471		-3.1	100.0	Q
Bromobenzene	0.9649	0.9320			-3.4	100.0	A
Bromochloromethane	0.2046	0.1768			-13.6	100.0	A
Bromodichloromethane	0.4159	0.4112			-1.1	100.0	A
Bromoform	0.4539	0.4125		0.100	-9.1	100.0	A
Bromomethane	50.0000		47.5694		-4.9	100.0	L
2-Butanone	0.0333	0.0294			-11.9	100.0	A
tert.- Butyl Alcohol	0.0185	0.0163			-12.0	100.0	A
tert-Butylbenzene	50.0000		47.7690		-4.5	100.0	L
n-Butylbenzene	50.0000		46.5102		-7.0	100.0	L
sec-Butylbenzene	50.0000		49.7133		-0.6	100.0	L
Carbon Disulfide	0.5800	0.5862			1.1	100.0	A
Carbon Tetrachloride	0.4832	0.4545			-5.9	100.0	A
Chloroacetonitrile	250		230		-8.0	100.0	L
Chlorobenzene	2.5136	2.3020		0.300	-8.4	100.0	A
1-Chlorobutane	0.2636	0.2586			-1.9	100.0	A
Chlorodibromomethane	0.7910	0.7796			-1.4	100.0	A
Chloroethane	0.1821	0.1734			-4.8	100.0	A
2-Chloroethylvinyl ether	50.0000		36.8015		-26.4	100.0	L
Chloroform	50.0000		49.1609		-1.7	20.0	L
1-Chlorohexane	50.0000		44.7149		-10.6	100.0	L
Chloromethane	0.3543	0.3290		0.100	-7.2	100.0	A
Chloroprene	0.4205	0.4052			-3.6	100.0	A
3-Chloro-1-propene	50.0000		52.2763		4.6	100.0	L
o-Chlorotoluene	2.4372	2.6468			8.6	100.0	A
p-Chlorotoluene	2.2608	2.4655			9.1	100.0	A
Cyclohexane	0.4286	0.4389			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1125	0.0994			-11.7	100.0	A
1,2-Dibromoethane	0.6925	0.6270			-9.5	100.0	A
Dibromomethane	0.2115	0.1885			-10.9	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		44.2129		-11.6	100.0	L
1,2-Dichlorobenzene	1.7283	1.6606			-3.9	100.0	A
1,3-Dichlorobenzene	1.8327	1.7582			-4.1	100.0	A
1,4-Dichlorobenzene	1.9306	1.7789			-7.9	100.0	A
Dichlorodifluoromethane	0.5604	0.4879			-12.9	100.0	A
1,1-Dichloroethane	0.5587	0.5026		0.100	-10.0	100.0	A
1,2-Dichloroethene, Total	100		93.1725		-6.8	100.0	L
1,2-Dichloroethane	0.4658	0.4173			-10.4	100.0	A
1,1-Dichloroethene	0.3752	0.3375			-10.1	20.0	A
cis-1,2-Dichloroethene	0.4029	0.3835			-4.8	100.0	A
trans-1,2-Dichloroethene	0.3461	0.3155			-8.8	100.0	A
Dichlorofluoromethane	0.5280	0.4763			-9.8	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.4079	0.3817			-6.4	100.0	A
1,3-Dichloropropane	1.1387	1.0885			-4.4	100.0	A
1,2-Dichloropropane	0.2824	0.2780			-1.5	20.0	A
1,1-Dichloropropene	0.4328	0.4237			-2.1	100.0	A
cis-1,3-Dichloropropene	50.0000		47.5647		-4.9	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.0680		-13.9	100.0	L
1,3-Dichloropropene, Total	100		90.6327		-9.4	100.0	L
Diisobutylene	50.0000		50.5871		1.2	100.0	L
Diisopropyl ether	0.6759	0.6197			-8.3	100.0	A
1,4-Dioxane	1250		1007		-19.5	100.0	L
Ethyl Acetate	0.1952	0.1834			-6.1	100.0	A
Ethyl ether	0.1500	0.1412			-5.9	100.0	A
Ethyl Methacrylate	50.0000		42.0274		-15.9	100.0	L
Ethyl tert-butyl ether	0.6930	0.6445			-7.0	100.0	A
Ethylbenzene	1.1461	1.1774			2.7	20.0	A
Freon 113	0.2702	0.2445			-9.5	100.0	A
Heptane	50.0000		48.6481		-2.7	100.0	L
Hexachlorobutadiene	0.5495	0.4655			-15.3	100.0	A
Hexachloroethane	0.4866	0.5083			4.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3426	0.3479			1.6	100.0	A
2-Hexanone	250		232		-7.3	100.0	L
Iodomethane	50.0000		35.6947		-28.6	100.0	L
Isobutyl alcohol	500		321		-35.9	100.0	L
Isopropyl Alcohol	250		207		-17.2	100.0	L
Isopropylbenzene	50.0000		48.8848		-2.2	100.0	L
p-Isopropyltoluene	50.0000		46.6939		-6.6	100.0	L
Methyl acetate	50.0000		44.6906		-10.6	100.0	L
Methyl acrylate	0.2017	0.2000			-0.8	100.0	A
Methacrylonitrile	50.0000		48.5976		-2.8	100.0	L
Methyl cyclohexane	1.0274	1.0882			5.9	100.0	A
Methyl methacrylate	50.0000		42.1466		-15.7	100.0	L
Methyl t-Butyl Ether	0.6772	0.5794			-14.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.4047	0.4528			11.9	100.0	A
Methylene Chloride	50.0000		50.6088		1.2	100.0	Q
Naphthalene	50.0000		44.3614		-11.3	100.0	Q
Nitrobenzene	500		438		-12.4	100.0	Q
2-Nitropropane	250		214		-14.4	100.0	L
Octane	50.0000		44.8317		-10.3	100.0	L
Pentachloroethane	0.6496	0.6157			-5.2	100.0	A
Pentane	0.1386	0.1306			-5.7	100.0	A
n-Propanol	0.0184	0.0174			-5.5	100.0	A
Propionitrile	0.0336	0.0307			-8.7	100.0	A
n-Propylbenzene	50.0000		48.7376		-2.5	100.0	L
Styrene	50.0000		47.0335		-5.9	100.0	L
1,1,1,2-Tetrachloroethane	0.8864	0.8120			-8.4	100.0	A
1,1,2,2-Tetrachloroethane	0.7947	0.7169		0.300	-9.8	100.0	A
Tetrachloroethene	0.9157	0.7639			-16.6	100.0	A
Tetrahydrofuran	0.0516	0.0531			2.9	100.0	A
Toluene	1.8476	1.8772			1.6	20.0	A
Total Xylenes	1.3188	1.4128			7.1	100.0	A
1,2,3-Trichlorobenzene	50.0000		43.2957		-13.4	100.0	Q
1,2,4-Trichlorobenzene	50.0000		42.7612		-14.5	100.0	Q
1,1,1-Trichloroethane	0.5574	0.5023			-9.9	100.0	A
1,1,2-Trichloroethane	0.5820	0.5435			-6.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-032

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3768	0.3369			-10.6	100.0	A
Trichlorofluoromethane	0.6514	0.5813			-10.8	100.0	A
1,2,3-Trichloropropane	0.2923	0.2498			-14.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		47.2511		-5.5	100.0	L
1,3,5-Trimethylbenzene	50.0000		48.4867		-3.0	100.0	L
Vinyl Acetate	0.0609	0.0584			-4.0	100.0	A
Vinyl Chloride	0.2944	0.2828			-3.9	20.0	A
o-Xylene	50.0000		47.3017		-5.4	100.0	Q
mp-Xylene	1.3599	1.4425			6.1	100.0	A
4-Bromofluorobenzene	50.0000		42.9408		-14.1	100.0	L
Dibromofluoromethane	50.0000		43.0623		-13.9	100.0	L
1,2-Dichloroethane-d4	50.0000		42.5168		-15.0	100.0	L
Toluene-d8	50.0000		43.9767		-12.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2178404

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 315051503.D Lab Sample ID: 2178404

Date Analyzed: 5/15/2015 Time Analyzed: 12:46

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms03.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2178405(LCS)	2178405	315051504.D	13:08
TB-051115	2070129012	315051507.D	14:14
MRC-MW-96A-051115	2070129007	315051514.D	16:47
MRC-MW-96B-051115	2070129008	315051515.D	17:09
MRC-MW-74A-051115	2070129011	315051518.D	18:15

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2178404(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2178404

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 315051503.D

Level (low/med): Date Received: 5/15/15

% Moisture: not dec. 100.0 Date Analyzed: 5/15/15

GC Column: RTXVRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2178404(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2178404

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 315051503.D

Level (low/med): Date Received: 5/15/15

% Moisture: not dec. 100.0 Date Analyzed: 5/15/15

GC Column: RTXVRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2180033

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 15051963.D Lab Sample ID: 2180033

Date Analyzed: 5/19/2015 Time Analyzed: 21:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2180034(LCS)	2180034	15051964.D	22:01
MRC-MW-02A-051115	2070129009	15051966.D	22:36
MRC-DUP05-051115	2070129010	15051967.D	22:53
MRC-MW-96B-051115-DL5	2070129008	15051973.D	00:36
MRC-MW-96A-051115-DL2	2070129007	15051975.D	01:10

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.51	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.39	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.31	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2181443

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-032

Lab File ID: 15052155.D Lab Sample ID: 2181443

Date Analyzed: 5/21/2015 Time Analyzed: 20:59

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2181444(LCS)	2181444	15052156.D	21:16
MRC-MW-96A-051115-DL1	2070129007	15052182.D	04:42

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.25	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-032

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2180033(MB)	92.7	91.2	94.4	95.0	0
02	2180034(LCS)	89.0	85.1	86.2	87.6	0
03	MRC-MW-02A-051115	93.4	87.4	92.7	94.5	0
04	MRC-DUP05-051115	89.8	89.1	93.3	92.6	0
05	MRC-MW-96B-051115-DL5	91.1	88.3	95.6	95.7	0
06	MRC-MW-96A-051115-DL200	87.9	93.0	96.7	92.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-032

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
07	2181443(MB)	87.2	88.5	93.5	91.9	0
08	2181444(LCS)	83.1	84.3	87.0	84.7	0
09	MRC-MW-96A-051115-DL1000	87.4	95.6	101	93.5	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-032

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
10	2177980(LCS)	117	94.7	98.3	98.4	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(73-119)
SMC2 (DBFM) = Dibromofluoromethane	(74-132)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(72-142)
SMC4 (TOL) = Toluene-d8	(75-133)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-032

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
11	2178404(MB)	109	90.6	95.1	101	0
12	2178405(LCS)	107	95.8	94.2	99.6	0
13	TB-051115	109	91.5	97.0	102	0
14	MRC-MW-96A-051115	115 *	97.4	95.9	102	1
15	MRC-MW-96B-051115	110	102	96.6	103	0
16	MRC-MW-74A-051115	110	95.5	98.2	102	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2177980

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		83.0	83	(24-178)
Benzene	20.0		19.1	95.4	(37-151)
Bromochloromethane	20.0		18.9	94.4	(68-129)
Bromodichloromethane	20.0		20.9	104	(35-155)
Bromoform	20.0		15.7	78.6	(45-169)
Bromomethane	20.0		18.9	94.7	(1-242)
2-Butanone	100		92.8	92.8	(65-154)
Carbon Disulfide	20.0		13.6	68	(57-133)
Carbon Tetrachloride	20.0		20.4	102	(70-140)
Chlorobenzene	20.0		19.7	98.4	(37-160)
Chlorodibromomethane	20.0		17.6	87.8	(53-149)
Chloroethane	20.0		14.8	73.8	(14-230)
Chloroform	20.0		19.7	98.4	(51-138)
Chloromethane	20.0		18.5	92.6	(1-273)
Cyclohexane	20.0		19.2	96	(62-136)
1,2-Dibromo-3-Chloropro	20.0		19.2	95.9	(57-130)
1,2-Dibromoethane	20.0		19.8	98.9	(77-125)
1,2-Dichlorobenzene	20.0		20.7	104	(18-190)
1,3-Dichlorobenzene	20.0		20.9	104	(59-156)
1,4-Dichlorobenzene	20.0		20.5	103	(18-190)
Dichlorodifluoromethane	20.0		15.0	75	(14-160)
1,1-Dichloroethane	20.0		18.8	94	(59-155)
1,2-Dichloroethane	20.0		18.8	94.1	(49-155)
1,1-Dichloroethene	20.0		17.7	88.5	(1-234)
cis-1,2-Dichloroethene	20.0		19.1	95.4	(80-126)
trans-1,2-Dichloroethen	20.0		18.8	94.2	(54-156)
1,2-Dichloropropane	20.0		19.7	98.3	(1-210)
cis-1,3-Dichloropropene	20.0		20.2	101	(1-227)
trans-1,3-Dichloroprope	20.0		21.8	109	(17-183)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2177980

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		426	85.3	(64-170)
Ethylbenzene	20.0		20.3	102	(37-162)
Freon 113	20.0		18.8	93.8	(70-130)
2-Hexanone	100		95.9	95.9	(75-153)
Isopropylbenzene	20.0		22.5	112	(74-133)
Methyl acetate	20.0		19.3	96.7	(70-130)
Methyl cyclohexane	20.0		20.1	100	(70-130)
Methyl t-Butyl Ether	20.0		18.7	93.4	(63-123)
4-Methyl-2-Pentanone(MI	100		97.8	97.8	(80-142)
Methylene Chloride	20.0		20.6	103	(1-221)
Styrene	20.0		21.3	106	(78-127)
1,1,2,2-Tetrachloroetha	20.0		20.6	103	(46-157)
Tetrachloroethene	20.0		19.2	96.1	(64-148)
Toluene	20.0		20.0	100	(47-150)
1,2,3-Trichlorobenzene	20.0		21.0	105	(43-132)
1,2,4-Trichlorobenzene	20.0		21.2	106	(53-129)
1,1,1-Trichloroethane	20.0		19.5	97.4	(52-162)
1,1,2-Trichloroethane	20.0		19.4	96.9	(52-150)
Trichloroethene	20.0		19.4	96.9	(71-157)
Trichlorofluoromethane	20.0		18.2	91	(17-181)
Vinyl Chloride	20.0		18.4	91.9	(1-251)
o-Xylene	20.0		21.0	105	(81-128)
mp-Xylene	40.0		41.5	104	(79-128)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		90.1	90.1	(40-151)
Benzene	20.0		20.0	99.9	(80-124)
Bromochloromethane	20.0		19.7	98.6	(73-117)
Bromodichloromethane	20.0		17.3	86.7	(79-126)
Bromoform	20.0		17.4	86.9	(70-123)
Bromomethane	20.0		15.4	76.9	(45-148)
2-Butanone	100		98.3	98.3	(50-152)
Carbon Disulfide	20.0		11.8	59	(57-131)
Carbon Tetrachloride	20.0		18.1	90.4	(62-132)
Chlorobenzene	20.0		20.3	101	(85-117)
Chlorodibromomethane	20.0		15.6	78.1	(77-122)
Chloroethane	20.0		13.8	69.2	(51-142)
Chloroform	20.0		20.3	101	(78-122)
Chloromethane	20.0		15.9	79.5	(38-156)
Cyclohexane	20.0		20.1	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.2	86.2	(59-133)
1,2-Dibromoethane	20.0		18.3	91.7	(80-124)
1,2-Dichlorobenzene	20.0		21.6	108	(82-118)
1,3-Dichlorobenzene	20.0		22.0	110	(81-118)
1,4-Dichlorobenzene	20.0		21.3	106	(81-116)
Dichlorodifluoromethane	20.0		13.4	67.1	(17-166)
1,1-Dichloroethane	20.0		19.8	98.9	(78-124)
1,2-Dichloroethane	20.0		19.2	96	(70-133)
1,1-Dichloroethene	20.0		18.2	91.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.7	98.7	(78-125)
trans-1,2-Dichloroethen	20.0		20.0	100	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		16.5	82.7	(81-121)
trans-1,3-Dichloroprope	20.0		18.0	89.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		385	76.9	(1-280)
Ethylbenzene	20.0		21.1	105	(80-124)
Freon 113	20.0		19.7	98.3	(50-130)
2-Hexanone	100		89.0	89	(65-154)
Isopropylbenzene	20.0		23.7	119	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		20.4	102	(70-130)
Methyl t-Butyl Ether	20.0		19.2	95.9	(69-115)
4-Methyl-2-Pentanone(MI	100		93.6	93.6	(71-146)
Methylene Chloride	20.0		21.1	105	(76-121)
Styrene	20.0		20.0	99.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		22.0	110	(74-135)
Tetrachloroethene	20.0		18.8	94.2	(72-124)
Toluene	20.0		21.2	106	(80-125)
1,2,3-Trichlorobenzene	20.0		20.3	101	(61-126)
1,2,4-Trichlorobenzene	20.0		18.5	92.6	(67-123)
1,1,1-Trichloroethane	20.0		21.1	106	(66-130)
1,1,2-Trichloroethane	20.0		20.3	101	(82-126)
Trichloroethene	20.0		19.0	95.1	(77-124)
Trichlorofluoromethane	20.0		16.5	82.4	(38-123)
Vinyl Chloride	20.0		15.9	79.7	(27-138)
o-Xylene	20.0		18.4	91.8	(79-124)
mp-Xylene	40.0		43.3	108	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		95.5	95.5	(40-151)
Benzene	20.0		20.0	99.8	(80-124)
Bromochloromethane	20.0		19.8	98.9	(73-117)
Bromodichloromethane	20.0		19.9	99.3	(79-126)
Bromoform	20.0		18.0	90.1	(70-123)
Bromomethane	20.0		20.7	104	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		16.5	82.6	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		19.3	96.7	(85-117)
Chlorodibromomethane	20.0		19.4	97	(77-122)
Chloroethane	20.0		15.8	79.1	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		16.8	84	(38-156)
Cyclohexane	20.0		20.6	103	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.7	(59-133)
1,2-Dibromoethane	20.0		18.6	92.9	(80-124)
1,2-Dichlorobenzene	20.0		20.3	101	(82-118)
1,3-Dichlorobenzene	20.0		20.5	102	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.4	(81-116)
Dichlorodifluoromethane	20.0		14.2	71.2	(17-166)
1,1-Dichloroethane	20.0		18.5	92.5	(78-124)
1,2-Dichloroethane	20.0		19.4	96.8	(70-133)
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.6	97.8	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.2	(71-122)
1,2-Dichloropropane	20.0		20.2	101	(81-127)
cis-1,3-Dichloropropene	20.0		17.8	89.2	(81-121)
trans-1,3-Dichloroprope	20.0		16.6	82.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.1	(1-280)
Ethylbenzene	20.0		21.2	106	(80-124)
Freon 113	20.0		18.3	91.6	(50-130)
2-Hexanone	100		84.4	84.4	(65-154)
Isopropylbenzene	20.0		18.8	93.8	(73-129)
Methyl acetate	20.0		18.9	94.6	(70-130)
Methyl cyclohexane	20.0		21.1	105	(70-130)
Methyl t-Butyl Ether	20.0		17.8	88.9	(69-115)
4-Methyl-2-Pentanone(MI	100		105	105	(71-146)
Methylene Chloride	20.0		20.9	104	(76-121)
Styrene	20.0		19.0	94.8	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.0	95.1	(74-135)
Tetrachloroethene	20.0		19.1	95.6	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.5	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		19.1	95.4	(66-130)
1,1,2-Trichloroethane	20.0		19.4	96.9	(82-126)
Trichloroethene	20.0		20.0	100	(77-124)
Trichlorofluoromethane	20.0		17.1	85.6	(38-123)
Vinyl Chloride	20.0		17.8	88.9	(27-138)
o-Xylene	20.0		17.9	89.6	(79-124)
mp-Xylene	40.0		43.4	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		101	101	(40-151)
Benzene	20.0		20.1	101	(80-124)
Bromochloromethane	20.0		18.9	94.5	(73-117)
Bromodichloromethane	20.0		20.1	101	(79-126)
Bromoform	20.0		17.7	88.7	(70-123)
Bromomethane	20.0		17.1	85.6	(45-148)
2-Butanone	100		106	106	(50-152)
Carbon Disulfide	20.0		14.2	71	(57-131)
Carbon Tetrachloride	20.0		19.1	95.5	(62-132)
Chlorobenzene	20.0		19.3	96.5	(85-117)
Chlorodibromomethane	20.0		18.8	93.8	(77-122)
Chloroethane	20.0		15.1	75.7	(51-142)
Chloroform	20.0		21.7	108	(78-122)
Chloromethane	20.0		15.2	75.9	(38-156)
Cyclohexane	20.0		19.1	95.7	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.3	(59-133)
1,2-Dibromoethane	20.0		18.5	92.7	(80-124)
1,2-Dichlorobenzene	20.0		20.0	100	(82-118)
1,3-Dichlorobenzene	20.0		20.5	103	(81-118)
1,4-Dichlorobenzene	20.0		19.8	99.1	(81-116)
Dichlorodifluoromethane	20.0		10.8	54.1	(17-166)
1,1-Dichloroethane	20.0		18.8	93.9	(78-124)
1,2-Dichloroethane	20.0		19.5	97.6	(70-133)
1,1-Dichloroethene	20.0		16.1	80.5	(63-128)
cis-1,2-Dichloroethene	20.0		19.5	97.5	(78-125)
trans-1,2-Dichloroethen	20.0		18.8	93.8	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.3	(81-121)
trans-1,3-Dichloroprope	20.0		16.9	84.5	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.2	(1-280)
Ethylbenzene	20.0		20.9	105	(80-124)
Freon 113	20.0		16.7	83.3	(50-130)
2-Hexanone	100		90.0	90	(65-154)
Isopropylbenzene	20.0		18.8	94.2	(73-129)
Methyl acetate	20.0		19.6	97.9	(70-130)
Methyl cyclohexane	20.0		19.7	98.5	(70-130)
Methyl t-Butyl Ether	20.0		17.3	86.7	(69-115)
4-Methyl-2-Pentanone(MI	100		114	114	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		19.2	95.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		17.8	89.1	(72-124)
Toluene	20.0		20.6	103	(80-125)
1,2,3-Trichlorobenzene	20.0		15.7	78.4	(61-126)
1,2,4-Trichlorobenzene	20.0		15.1	75.7	(67-123)
1,1,1-Trichloroethane	20.0		18.4	92.2	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.2	(82-126)
Trichloroethene	20.0		19.7	98.3	(77-124)
Trichlorofluoromethane	20.0		15.5	77.3	(38-123)
Vinyl Chloride	20.0		16.0	80.1	(27-138)
o-Xylene	20.0		17.1	85.7	(79-124)
mp-Xylene	40.0		42.1	105	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Lab File ID: 315051407.D Date Analyzed: 5/14/2015

Instrument ID: ms03.i Time Analyzed: 12:20

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	581104	5.672	534163	7.429	1544615	3.697
UPPER LIMIT	1162208	6.172	1068326	7.929	3089230	4.197
LOWER LIMIT	290552	5.172	267082	6.929	772308	3.197
SAMPLE NO.						
2177980(LCS)	605883	5.667	536457	7.429	1603544	3.697

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Lab File ID: 315051501.D Date Analyzed: 5/15/2015

Instrument ID: ms03.i Time Analyzed: 11:47

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	620782	5.672	556084	7.429	1627988	3.697
UPPER LIMIT	1241564	6.172	1112168	7.929	3255976	4.197
LOWER LIMIT	310391	5.172	278042	6.929	813994	3.197
SAMPLE NO.						
1800	620782	5.672	556084	7.429	1627988	3.697
2178404(MB)	576550	5.672	477949	7.429	1589997	3.703
2178405(LCS)	620099	5.673	538178	7.429	1623556	3.697
TB-051115	554729	5.673	457365	7.429	1536497	3.703
MRC-MW-96A-051115	566212	5.672	468264	7.429	1524702	3.703
MRC-MW-96B-051115	518507	5.672	471012	7.429	1413648	3.703
MRC-MW-74A-051115	536011	5.673	442466	7.430	1464456	3.703

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Lab File ID: 15051957.D Date Analyzed: 5/19/2015

Instrument ID: ms15.i Time Analyzed: 20:01

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	442721	5.913	482015	7.686	1040326	3.910
UPPER LIMIT	885442	6.413	964030	8.186	2080652	4.410
LOWER LIMIT	221361	5.413	241008	7.186	520163	3.410
SAMPLE NO.						
2180033(MB)	340198	5.912	318831	7.686	905002	3.910
2180034(LCS)	443472	5.913	470706	7.686	1024069	3.910
MRC-MW-02A-051115	346088	5.912	322177	7.686	929662	3.910
MRC-DUP05-051115	331415	5.913	308537	7.686	905058	3.910
MRC-MW-96B-051115	304716	5.912	337269	7.686	874310	3.910
MRC-MW-96A-051115	306950	5.913	286380	7.686	819703	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-032

Lab File ID: 15052152.D Date Analyzed: 5/21/2015

Instrument ID: ms15.i Time Analyzed: 19:52

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	446497	5.913	474860	7.686	1061227	3.910
UPPER LIMIT	892994	6.413	949720	8.186	2122454	4.410
LOWER LIMIT	223249	5.413	237430	7.186	530614	3.410
SAMPLE NO.						
1800	446497	5.913	474860	7.686	1061227	3.910
2181443(MB)	318636	5.912	286997	7.686	865950	3.910
2181444(LCS)	433839	5.913	450022	7.686	982691	3.910
MRC-MW-96A-051115	284864	5.912	250614	7.686	774379	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Semivolatile Organics by 522 Summary Forms

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Instrument ID: MS12 Calibration Date: 05/14/15 Time: 0839

Lab File ID: 12051401 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.96e-003	3.5e-003	1.1264561	0.00001	13.14	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6235173	0.6235173	0.00001	-12.43	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2177118

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Lab File ID: 12051402 Lab Sample ID: 2177118

Instrument ID: MS12 Date Extracted: 05/13/15

Matrix: (soil/water) WATER Date Analyzed: 05/14/15

Level:(low/med) LOW Time Analyzed: 0904

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2177119LCSLO	2177119	12051403	05/14/15
02	MRC-MW-96A-0	2070129007	12051407	05/14/15
03	MRC-MW-96B-0	2070129008	12051408	05/14/15
04				
05				
06				
07				
08				
09				
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COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2177118

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Matrix: (soil/water) WATER Lab Sample ID: 2177118

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12051402

Level: (low/med) LOW Date Received: 05/13/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/13/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/14/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2177118	84								0
02	2177119LCSLO	84								0
03	MRC-MW-96A-0	80								0
04	MRC-MW-96B-0	80								0
05										
06										
07										
08										
09										
10										
11										
12										
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27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

Matrix Spike - Sample No.: 2177119LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0685946	98	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/14/15

Lab File ID (Standard): 12051401 Time Analyzed: 0839

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	47633	6.36				
	UPPER LIMIT	61923	6.86				
	LOWER LIMIT	33343	5.86				
	SAMPLE NO.						
01	2177118	47732	6.35				
02	2177119LCSLO	47805	6.36				
03	MRC-MW-96A-0	51359	6.36				
04	MRC-MW-96B-0	49027	6.36				
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/14/15	0839	8.36			
02	2177118	2177118	05/14/15	0904	8.36			
03	2177119LCSLO	2177119	05/14/15	0931	8.36			
04	MRC-MW-96A-0	2070129007	05/14/15	1111	8.38			
05	MRC-MW-96B-0	2070129008	05/14/15	1137	8.38			
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
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23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM032

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1045	0.1000	104		90 - 110	M	5/14/2015	00:04	A051415 23
	Arsenic	0.1018	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
	Barium	0.1007	0.1000	101		90 - 110	M	5/14/2015	00:04	A051415 23
	Beryllium	0.1038	0.1000	104		90 - 110	M	5/14/2015	00:04	A051415 23
	Cadmium	0.1020	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
	Chromium	0.1025	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
	Cobalt	0.1010	0.1000	101		90 - 110	M	5/14/2015	00:04	A051415 23
	Copper	0.1007	0.1000	101		90 - 110	M	5/14/2015	00:04	A051415 23
	Lead	0.1017	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
	Manganese	0.1027	0.1000	103		90 - 110	M	5/14/2015	00:04	A051415 23
	Molybdenum	0.1021	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
	Nickel	0.0988	0.1000	99		90 - 110	M	5/14/2015	00:04	A051415 23
	Selenium	0.1001	0.1000	100		90 - 110	M	5/14/2015	00:04	A051415 23
	Silver	0.0982	0.1000	98		90 - 110	M	5/14/2015	00:04	A051415 23
	Thallium	0.0989	0.1000	99		90 - 110	M	5/14/2015	00:04	A051415 23
	Vanadium	0.1020	0.1000	102		90 - 110	M	5/14/2015	00:04	A051415 23
LLICV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/14/2015	00:11	A051415 23
	Barium	0.0054	0.0050	108		70 - 130	M	5/14/2015	00:11	A051415 23
	Beryllium	0.0011	0.0010	110		70 - 130	M	5/14/2015	00:11	A051415 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/14/2015	00:11	A051415 23
	Chromium	0.0020	0.0020	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Copper	0.0050	0.0050	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Manganese	0.0051	0.0050	102		70 - 130	M	5/14/2015	00:11	A051415 23
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/14/2015	00:11	A051415 23
	Nickel	0.0052	0.0050	104		70 - 130	M	5/14/2015	00:11	A051415 23
	Selenium	0.0049	0.0050	98		70 - 130	M	5/14/2015	00:11	A051415 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/14/2015	00:11	A051415 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/14/2015	00:11	A051415 23
	Vanadium	0.0020	0.0020	100		70 - 130	M	5/14/2015	00:11	A051415 23

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1024	0.1000	102		90 - 110	M	5/14/2015	01:07	A051415 23
	Arsenic	0.0983	0.1000	98		90 - 110	M	5/14/2015	01:07	A051415 23
	Barium	0.0975	0.1000	98		90 - 110	M	5/14/2015	01:07	A051415 23
	Beryllium	0.0991	0.1000	99		90 - 110	M	5/14/2015	01:07	A051415 23
	Cadmium	0.1006	0.1000	101		90 - 110	M	5/14/2015	01:07	A051415 23
	Chromium	0.1022	0.1000	102		90 - 110	M	5/14/2015	01:07	A051415 23
	Cobalt	0.0998	0.1000	100		90 - 110	M	5/14/2015	01:07	A051415 23
	Copper	0.1008	0.1000	101		90 - 110	M	5/14/2015	01:07	A051415 23
	Lead	0.1013	0.1000	101		90 - 110	M	5/14/2015	01:07	A051415 23
	Manganese	0.1025	0.1000	102		90 - 110	M	5/14/2015	01:07	A051415 23
	Molybdenum	0.1006	0.1000	101		90 - 110	M	5/14/2015	01:07	A051415 23
	Nickel	0.0986	0.1000	99		90 - 110	M	5/14/2015	01:07	A051415 23
	Selenium	0.0969	0.1000	97		90 - 110	M	5/14/2015	01:07	A051415 23
	Silver	0.0963	0.1000	96		90 - 110	M	5/14/2015	01:07	A051415 23
	Thallium	0.0982	0.1000	98		90 - 110	M	5/14/2015	01:07	A051415 23
	Vanadium	0.1020	0.1000	102		90 - 110	M	5/14/2015	01:07	A051415 23
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Barium	0.0050	0.0050	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/14/2015	01:15	A051415 23
	Chromium	0.0020	0.0020	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Copper	0.0050	0.0050	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Manganese	0.0051	0.0050	102		70 - 130	M	5/14/2015	01:15	A051415 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Nickel	0.0051	0.0050	102		70 - 130	M	5/14/2015	01:15	A051415 23
	Selenium	0.0048	0.0050	96		70 - 130	M	5/14/2015	01:15	A051415 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/14/2015	01:15	A051415 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/14/2015	01:15	A051415 23
	Vanadium	0.0019	0.0020	95		70 - 130	M	5/14/2015	01:15	A051415 23

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1026	0.1000	103		90 - 110	M	5/14/2015	01:56	A051415 23
	Arsenic	0.0966	0.1000	97		90 - 110	M	5/14/2015	01:56	A051415 23
	Barium	0.0980	0.1000	98		90 - 110	M	5/14/2015	01:56	A051415 23
	Beryllium	0.1009	0.1000	101		90 - 110	M	5/14/2015	01:56	A051415 23
	Cadmium	0.1012	0.1000	101		90 - 110	M	5/14/2015	01:56	A051415 23
	Chromium	0.1020	0.1000	102		90 - 110	M	5/14/2015	01:56	A051415 23
	Cobalt	0.0997	0.1000	100		90 - 110	M	5/14/2015	01:56	A051415 23
	Copper	0.0998	0.1000	100		90 - 110	M	5/14/2015	01:56	A051415 23
	Lead	0.1019	0.1000	102		90 - 110	M	5/14/2015	01:56	A051415 23
	Manganese	0.1028	0.1000	103		90 - 110	M	5/14/2015	01:56	A051415 23
	Molybdenum	0.1000	0.1000	100		90 - 110	M	5/14/2015	01:56	A051415 23
	Nickel	0.0985	0.1000	98		90 - 110	M	5/14/2015	01:56	A051415 23
	Selenium	0.0961	0.1000	96		90 - 110	M	5/14/2015	01:56	A051415 23
	Silver	0.0968	0.1000	97		90 - 110	M	5/14/2015	01:56	A051415 23
	Thallium	0.0986	0.1000	99		90 - 110	M	5/14/2015	01:56	A051415 23
	Vanadium	0.1015	0.1000	102		90 - 110	M	5/14/2015	01:56	A051415 23
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/14/2015	02:03	A051415 23
	Barium	0.0052	0.0050	104		70 - 130	M	5/14/2015	02:03	A051415 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/14/2015	02:03	A051415 23
	Chromium	0.0021	0.0020	105		70 - 130	M	5/14/2015	02:03	A051415 23
	Cobalt	0.0050	0.0050	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Copper	0.0050	0.0050	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Manganese	0.0052	0.0050	104		70 - 130	M	5/14/2015	02:03	A051415 23
	Molybdenum	0.0021	0.0020	105		70 - 130	M	5/14/2015	02:03	A051415 23
	Nickel	0.0051	0.0050	102		70 - 130	M	5/14/2015	02:03	A051415 23
	Selenium	0.0049	0.0050	98		70 - 130	M	5/14/2015	02:03	A051415 23
	Silver	0.0020	0.0020	100		70 - 130	M	5/14/2015	02:03	A051415 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/14/2015	02:03	A051415 23
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/14/2015	02:03	A051415 23

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/14/2015	00:08	A051415 2338 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/14/2015	00:08	A051415 2338 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/14/2015	00:08	A051415 2338 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	00:08	A051415 2338 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/14/2015	00:08	A051415 2338 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	00:08	A051415 2338 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/14/2015	01:11	A051415 2338 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/14/2015	01:11	A051415 2338 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/14/2015	01:11	A051415 2338 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	01:11	A051415 2338 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/14/2015	01:11	A051415 2338 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	01:11	A051415 2338 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/14/2015	02:00	A051415 2338 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/14/2015	02:00	A051415 2338 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/14/2015	02:00	A051415 2338 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/14/2015	02:00	A051415 2338 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/14/2015	02:00	A051415 2338 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/14/2015	02:00	A051415 2338 (

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2176944			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/14/2015	00:30	A051415 2338 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/14/2015	00:30	A051415 2338 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/14/2015	00:30	A051415 2338 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/14/2015	00:30	A051415 2338 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	5/14/2015	00:30	A051415 2338 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/14/2015	00:30	A051415 2338 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Molybdenum	0.00121	J		0.0022	0.00067	0.00222	M	5/14/2015	00:30	A051415 2338 (
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/14/2015	00:30	A051415 2338 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/14/2015	00:30	A051415 2338 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/14/2015	00:30	A051415 2338 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/14/2015	00:30	A051415 2338 (

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/14/2015	00:15	A051415 2338
	Arsenic	0.0002				-0.00300 - -0.00300	5/14/2015	00:15	A051415 2338
	Barium	0.0003				-0.01000 - -0.01000	5/14/2015	00:15	A051415 2338
	Beryllium	0.00003				-0.001000 - -0.001000	5/14/2015	00:15	A051415 2338
	Cadmium	0.0007				-0.00100 - -0.00100	5/14/2015	00:15	A051415 2338
	Chromium	0.0006				-0.00400 - -0.00400	5/14/2015	00:15	A051415 2338
	Cobalt	0.0006				-0.00600 - -0.00600	5/14/2015	00:15	A051415 2338
	Copper	0.0014				-0.00500 - -0.00500	5/14/2015	00:15	A051415 2338
	Lead	0.0001				-0.00200 - -0.00200	5/14/2015	00:15	A051415 2338
	Manganese	0.0012				-0.01000 - -0.01000	5/14/2015	00:15	A051415 2338
	Molybdenum	2.0171	2.00000	101		80 - 120%	5/14/2015	00:15	A051415 2338
	Nickel	0.0006				-0.00500 - -0.00500	5/14/2015	00:15	A051415 2338
	Selenium	0.0001				-0.00500 - -0.00500	5/14/2015	00:15	A051415 2338
	Silver	0.0004				-0.00200 - -0.00200	5/14/2015	00:15	A051415 2338
	Thallium	0.00003				-0.001000 - -0.001000	5/14/2015	00:15	A051415 2338
	Vanadium	0.0002				-0.00200 - -0.00200	5/14/2015	00:15	A051415 2338
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	5/14/2015	00:19	A051415 2338
	Arsenic	0.0198	0.02000	99		80 - 120%	5/14/2015	00:19	A051415 2338
	Barium	0.0003				-0.00500 - -0.00500	5/14/2015	00:19	A051415 2338
	Beryllium	0.00003				-0.001000 - -0.001000	5/14/2015	00:19	A051415 2338
	Cadmium	0.0099	0.01000	99		80 - 120%	5/14/2015	00:19	A051415 2338
	Chromium	0.0189	0.02000	94		80 - 120%	5/14/2015	00:19	A051415 2338
	Cobalt	0.0372	0.04000	93		80 - 120%	5/14/2015	00:19	A051415 2338
	Copper	0.0189	0.02000	94		80 - 120%	5/14/2015	00:19	A051415 2338
	Lead	0.0002				-0.00200 - -0.00200	5/14/2015	00:19	A051415 2338
	Manganese	0.0198	0.02000	99		80 - 120%	5/14/2015	00:19	A051415 2338
	Molybdenum	2.0418	2.00000	102		80 - 120%	5/14/2015	00:19	A051415 2338
	Nickel	0.0359	0.04000	90		80 - 120%	5/14/2015	00:19	A051415 2338
	Selenium	0.0177	0.02000	88		80 - 120%	5/14/2015	00:19	A051415 2338
	Silver	0.0181	0.02000	90		80 - 120%	5/14/2015	00:19	A051415 2338
	Thallium	0.00002				-0.001000 - -0.001000	5/14/2015	00:19	A051415 2338
	Vanadium	0.0395	0.04000	99		80 - 120%	5/14/2015	00:19	A051415 2338

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2176945									
	Antimony	mg/L	0.2220	0.2210		100		80 - 120	M
	Arsenic	mg/L	0.2220	0.2067		93		80 - 120	M
	Barium	mg/L	2.2220	2.3150		104		80 - 120	M
	Beryllium	mg/L	0.2220	0.2050		92		80 - 120	M
	Cadmium	mg/L	0.2220	0.2247		101		80 - 120	M
	Chromium	mg/L	0.2220	0.2242		101		80 - 120	M
	Cobalt	mg/L	0.2220	0.2235		101		80 - 120	M
	Copper	mg/L	0.2220	0.2197		99		80 - 120	M
	Lead	mg/L	0.2220	0.2296		103		80 - 120	M
	Manganese	mg/L	0.2220	0.2305		104		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2214		100		80 - 120	M
	Nickel	mg/L	0.2220	0.2279		103		80 - 120	M
	Selenium	mg/L	0.2220	0.1906		86		80 - 120	M
	Silver	mg/L	0.1110	0.1118		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2179		98		80 - 120	M
	Vanadium	mg/L	0.2220	0.2224		100		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72723						
2176944	MB for HBN 72723 [MDIG/50811	MB	QC-WAT	5/13/15	45.0	50.0	
2176945	LCS for HBN 72723 [MDIG/50811	LCS	QC-WAT	5/13/15	45.0	50.0	
2070129007	MRC-MW-96A-051115	SAM	WATER	5/13/15	45.0	50.0	
2070129008	MRC-MW-96B-051115	SAM	WATER	5/13/15	45.0	50.0	
2070129009	MRC-MW-02A-051115	SAM	WATER	5/13/15	45.0	50.0	
2070129010	MRC-DUP05-051115	SAM	WATER	5/13/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2338																										
BLK	1.00	0342			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
STANDARD 1	1.00	2345			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
STANDARD 2	1.00	2349			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
STANDARD 3	1.00	2353			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
STANDARD 4	1.00	2356			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
STANDARD 5	1.00	0000			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ICV	1.00	0004			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ICB1	1.00	0008			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
LLICV	1.00	0011			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ICS-A1	1.00	0015			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ICS-AB1	1.00	0019			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ZZZZZZ	1.00	0023																										
ZZZZZZ	1.00	0026																										
2176944	1.00	0030			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
2176945	1.00	0034			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ZZZZZZ	1.00	0038																										
ZZZZZZ	5.00	0041																										
ZZZZZZ	1.00	0045																										
ZZZZZZ	1.00	0049																										
ZZZZZZ	5.00	0052																										
ZZZZZZ	1.00	0056																										
ZZZZZZ	1.00	0100																										
ZZZZZZ	1.00	0104																										
CCV1	1.00	0107			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
CCB1	1.00	0111			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
LLCCV	1.00	0115			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
ZZZZZZ	1.00	0119																										
ZZZZZZ	1.00	0122																										
ZZZZZZ	1.00	0126																										
ZZZZZZ	1.00	0130																										
ZZZZZZ	1.00	0133																										
2070129007	1.00	0137			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
2070129008	1.00	0141			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
2070129009	1.00	0145			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*
2070129010	1.00	0148			X	X	X	X	X		X	x	x		X		X		X		X	X		X	x			*

6020 3015
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0152																									
CCV2	1.00	0156			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0200			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0203			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0207																									
ZZZZZZ	1.00	0211																									
ZZZZZZ	1.00	0215																									
ZZZZZZ	1.00	0219																									
ZZZZZZ	1.00	0222																									
ZZZZZZ	1.00	0226																									
ZZZZZZ	1.00	0230																									
ZZZZZZ	1.00	0234																									
ZZZZZZ	5.00	0237																									
ZZZZZZ	5.00	0241																									
ZZZZZZ	1.00	0245																									
ZZZZZZ	1.00	0249																									
ZZZZZZ	1.00	0252																									
ZZZZZZ	5.00	0256																									
ZZZZZZ	5.00	0300																									
ZZZZZZ	5.00	0304																									
ZZZZZZ	5.00	0308																									
ZZZZZZ	5.00	0312																									
ZZZZZZ	5.00	0316																									
ZZZZZZ	5.00	0320																									
ZZZZZZ	5.00	0323																									
ZZZZZZ	5.00	0327																									
ZZZZZZ	25.00	0331																									
ZZZZZZ	1.00	0335																									
ZZZZZZ	1.00	0339																									
ZZZZZZ	1.00	0342																									
ZZZZZZ	5.00	0346																									
ZZZZZZ	5.00	0350																									
ZZZZZZ	5.00	0354																									
ZZZZZZ	5.00	0358																									
ZZZZZZ	5.00	0401																									
ZZZZZZ	5.00	0405																									

6020 3015
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0409																								
ZZZZZZ	5.00	0413																								
ZZZZZZ	1.00	0417																								
ZZZZZZ	1.00	0421																								
ZZZZZZ	1.00	0424																								
ZZZZZZ	1.00	0428																								
ZZZZZZ	1.00	0432																								
ZZZZZZ	5.00	0435																								
ZZZZZZ	5.00	0439																								
ZZZZZZ	1.00	0443																								
ZZZZZZ	1.00	0447																								
ZZZZZZ	1.00	0450																								
ZZZZZZ	1.00	0454																								
ZZZZZZ	1.00	0458																								
ZZZZZZ	1.00	0501																								
ZZZZZZ	1.00	0505																								
ZZZZZZ	1.00	0509																								
ZZZZZZ	1.00	0513																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	23:38																									
BLK	1.00	23:42					X																				
STANDARD 1	1.00	23:45					X																				
STANDARD 2	1.00	23:49					X																				
STANDARD 3	1.00	23:53					X																				
STANDARD 4	1.00	23:56					X																				
STANDARD 5	1.00	00:00					X																				
ICV	1.00	00:04					X																				
ICB1	1.00	00:08					X																				
LLICV	1.00	00:11					X																				
ICS-A1	1.00	00:15					X																				
ICS-AB1	1.00	00:19					X																				
ZZZZZZ	1.00	00:23																									
ZZZZZZ	1.00	00:26																									
2176944	1.00	00:30					X																				
2176945	1.00	00:34					X																				
ZZZZZZ	1.00	00:38																									
ZZZZZZ	5.00	00:41																									
ZZZZZZ	1.00	00:45																									
ZZZZZZ	1.00	00:49																									
ZZZZZZ	5.00	00:52																									
ZZZZZZ	1.00	00:56																									
ZZZZZZ	1.00	01:00																									
ZZZZZZ	1.00	01:04																									
CCV1	1.00	01:07					X																				
CCB1	1.00	01:11					X																				
LLCCV	1.00	01:15					X																				
ZZZZZZ	1.00	01:19																									
ZZZZZZ	1.00	01:22																									
ZZZZZZ	1.00	01:26																									
ZZZZZZ	1.00	01:30																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	01:33																									
2070129007	1.00	01:37					X																				
2070129008	1.00	01:41					X																				
2070129009	1.00	01:45					X																				
2070129010	1.00	01:48					X																				
ZZZZZZ	1.00	01:52																									
CCV2	1.00	01:56					X																				
CCB2	1.00	02:00					X																				
LLCCV	1.00	02:03					X																				
ZZZZZZ	1.00	02:07																									
ZZZZZZ	1.00	02:11																									
ZZZZZZ	1.00	02:15																									
ZZZZZZ	1.00	02:19																									
ZZZZZZ	1.00	02:22																									
ZZZZZZ	1.00	02:26																									
ZZZZZZ	1.00	02:30																									
ZZZZZZ	1.00	02:34																									
ZZZZZZ	5.00	02:37																									
ZZZZZZ	5.00	02:41																									
ZZZZZZ	1.00	02:45																									
ZZZZZZ	1.00	02:49																									
ZZZZZZ	1.00	02:52																									
ZZZZZZ	5.00	02:56																									
ZZZZZZ	5.00	03:00																									
ZZZZZZ	5.00	03:04																									
ZZZZZZ	5.00	03:08																									
ZZZZZZ	5.00	03:12																									
ZZZZZZ	5.00	03:16																									
ZZZZZZ	5.00	03:20																									
ZZZZZZ	5.00	03:23																									
ZZZZZZ	5.00	03:27																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-032

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A051415 2338

Start Date: 5/13/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	25.00	03:31																									
ZZZZZZ	1.00	03:35																									
ZZZZZZ	1.00	03:39																									
ZZZZZZ	1.00	03:42																									
ZZZZZZ	5.00	03:46																									
ZZZZZZ	5.00	03:50																									
ZZZZZZ	5.00	03:54																									
ZZZZZZ	5.00	03:58																									
ZZZZZZ	5.00	04:01																									
ZZZZZZ	5.00	04:05																									
ZZZZZZ	5.00	04:09																									
ZZZZZZ	5.00	04:13																									
ZZZZZZ	1.00	04:17																									
ZZZZZZ	1.00	04:21																									
ZZZZZZ	1.00	04:24																									
ZZZZZZ	1.00	04:28																									
ZZZZZZ	1.00	04:32																									
ZZZZZZ	5.00	04:35																									
ZZZZZZ	5.00	04:39																									
ZZZZZZ	1.00	04:43																									
ZZZZZZ	1.00	04:47																									
ZZZZZZ	1.00	04:50																									
ZZZZZZ	1.00	04:54																									
ZZZZZZ	1.00	04:58																									
ZZZZZZ	1.00	05:01																									
ZZZZZZ	1.00	05:05																									
ZZZZZZ	1.00	05:09																									
ZZZZZZ	1.00	05:13																									

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: _____ SDG NO.: TMM-032

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/13/2015 End Date: 05/14/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2338												
BLK	BLK	2342	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2345	100		101		100		100		101		101	
STANDARD 2	STANDARD 2	2349	101		101		101		100		101		102	
STANDARD 3	STANDARD 3	2353	102		99		101		100		101		101	
STANDARD 4	STANDARD 4	2356	102		100		101		101		102		101	
STANDARD 5	STANDARD 5	0000	101		101		100		100		100		100	
ICV	ICV	0004	101		100		99		99		99		99	
ICB1	ICB	0008	100		98		99		98		98		97	
LLICV	LLICV	0011	100		98		98		97		96		98	
ICS-A1	ICSA	0015	91		98		93		98		101		100	
ICS-AB1	ICSAB	0019	93		100		94		97		99		102	
CHECK	ZZZZZZ	0023												
CHECK	ZZZZZZ	0026												
2176944	MB for HBN 72723	0030	101		114		96		93		88		98	
2176945	LCS for HBN 7272	0034	99		114		97		93		89		99	
2069900024	ZZZZZZ	0038												
2069900024L	ZZZZZZ	0041												
2069900024P	ZZZZZZ	0045												
2070024031	ZZZZZZ	0049												
2070024031L	ZZZZZZ	0052												
2070024031P	ZZZZZZ	0056												
2070171001	ZZZZZZ	0100												
2070020001	ZZZZZZ	0104												
CCV1	CCV	0107	105		101		101		99		97		102	
CCB1	CCB	0111	103		99		99		97		95		100	
LLCCV	LLCCV	0115	104		99		99		97		95		102	
2070021001	ZZZZZZ	0119												
2070021001S	ZZZZZZ	0122												
2070021001S	ZZZZZZ	0126												
2070022001	ZZZZZZ	0130												
2070023001	ZZZZZZ	0133												
2070129007	NRC-MW-96A-05111	0137	94		108		91		91		87		97	
2070129008	NRC-MW-96B-05111	0141	87		107		87		90		89		98	
2070129009	NRC-MW-02A-05111	0145	96		108		92		92		89		98	
2070129010	NRC-DUP05-051115	0148	96		108		92		92		91		98	
2070329001	ZZZZZZ	0152												
CCV2	CCV	0156	105		101		99		99		97		103	
CCB2	CCB	0200	103		97		96		95		93		99	
LLCCV	LLCCV	0203	101		96		95		94		88		96	
2070329002	ZZZZZZ	0207												
2070330001	ZZZZZZ	0211												
2070330002	ZZZZZZ	0215												
2070331001	ZZZZZZ	0219												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: _____ SDG NO.: TMM-032

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/13/2015 End Date: 05/14/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070331002	ZZZZZZ	0222												
2070331003	ZZZZZZ	0226												
2070331004	ZZZZZZ	0230												
2070331005	ZZZZZZ	0234												
2176962	ZZZZZZ	0237												
2176964	ZZZZZZ	0241												
CCV3	ZZZZZZ	0245												
CCB3	ZZZZZZ	0249												
LLCCV	ZZZZZZ	0252												
2070282001	ZZZZZZ	0256												
2176965	ZZZZZZ	0300												
2176966	ZZZZZZ	0304												
2070282001P	ZZZZZZ	0308												
2070282002	ZZZZZZ	0312												
2070282003	ZZZZZZ	0316												
2070282004	ZZZZZZ	0320												
2070282005	ZZZZZZ	0323												
2070282006	ZZZZZZ	0327												
2070282006L	ZZZZZZ	0331												
CCV4	ZZZZZZ	0335												
CCB4	ZZZZZZ	0339												
LLCCV	ZZZZZZ	0342												
2070278002	ZZZZZZ	0346												
2070291001	ZZZZZZ	0350												
2070294001	ZZZZZZ	0354												
2070294003	ZZZZZZ	0358												
2070294005	ZZZZZZ	0401												
2070294007	ZZZZZZ	0405												
2070294009	ZZZZZZ	0409												
2070294011	ZZZZZZ	0413												
2176915	ZZZZZZ	0417												
CCV5	ZZZZZZ	0421												
CCB5	ZZZZZZ	0424												
LLCCV	ZZZZZZ	0428												
2176916	ZZZZZZ	0432												
2070174001	ZZZZZZ	0435												
2176919	ZZZZZZ	0439												
2177412	ZZZZZZ	0443												
2177413	ZZZZZZ	0447												
2070339001	ZZZZZZ	0450												
2070339002	ZZZZZZ	0454												
2070341001	ZZZZZZ	0458												
2070276001	ZZZZZZ	0501												
2070315001	ZZZZZZ	0505												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-032

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/13/2015 End Date: 05/14/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
CCV6	ZZZZZZ	0509												
CCB6	ZZZZZZ	0513												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-032

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/13/2015 End Date: 05/14/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2338												
BLK	2342	100											
STANDARD 1	2345	100											
STANDARD 2	2349	101											
STANDARD 3	2353	101											
STANDARD 4	2356	101											
STANDARD 5	0000	101											
ICV	0004	101											
ICB	0008	100											
LLICV	0011	99											
ICSA	0015	100											
ICSAB	0019	102											
ZZZZZZ	0023												
ZZZZZZ	0026												
MB for HBN 72723	0030	100											
LCS for HBN 7272	0034	101											
ZZZZZZ	0038												
ZZZZZZ	0041												
ZZZZZZ	0045												
ZZZZZZ	0049												
ZZZZZZ	0052												
ZZZZZZ	0056												
ZZZZZZ	0100												
ZZZZZZ	0104												
CCV	0107	104											
CCB	0111	103											
LLCCV	0115	102											
ZZZZZZ	0119												
ZZZZZZ	0122												
ZZZZZZ	0126												
ZZZZZZ	0130												
ZZZZZZ	0133												
MRC-MW-96A-05111	0137	98											
MRC-MW-96B-05111	0141	95											
MRC-MW-02A-05111	0145	99											
MRC-DUP05-051115	0148	99											
ZZZZZZ	0152												
CCV	0156	103											
CCB	0200	100											
LLCCV	0203	98											
ZZZZZZ	0207												
ZZZZZZ	0211												
ZZZZZZ	0215												
ZZZZZZ	0219												
ZZZZZZ	0222												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-032

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/13/2015 End Date: 05/14/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0226												
ZZZZZZ	0230												
ZZZZZZ	0234												
ZZZZZZ	0237												
ZZZZZZ	0241												
ZZZZZZ	0245												
ZZZZZZ	0249												
ZZZZZZ	0252												
ZZZZZZ	0256												
ZZZZZZ	0300												
ZZZZZZ	0304												
ZZZZZZ	0308												
ZZZZZZ	0312												
ZZZZZZ	0316												
ZZZZZZ	0320												
ZZZZZZ	0323												
ZZZZZZ	0327												
ZZZZZZ	0331												
ZZZZZZ	0335												
ZZZZZZ	0339												
ZZZZZZ	0342												
ZZZZZZ	0346												
ZZZZZZ	0350												
ZZZZZZ	0354												
ZZZZZZ	0358												
ZZZZZZ	0401												
ZZZZZZ	0405												
ZZZZZZ	0409												
ZZZZZZ	0413												
ZZZZZZ	0417												
ZZZZZZ	0421												
ZZZZZZ	0424												
ZZZZZZ	0428												
ZZZZZZ	0432												
ZZZZZZ	0435												
ZZZZZZ	0439												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0450												
ZZZZZZ	0454												
ZZZZZZ	0458												
ZZZZZZ	0501												
ZZZZZZ	0505												
ZZZZZZ	0509												
ZZZZZZ	0513												

Total Metals by 6010C Summary Forms

6010C 3015

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.975	1.000	98		90 - 110	P	5/14/2015	08:21	051415A 30
CCV	Iron	2.485	2.500	99		90 - 110	P	5/14/2015	08:33	051415A 30
CCV	Iron	2.554	2.500	102		90 - 110	P	5/14/2015	09:37	051415A 30
CCV	Iron	2.541	2.500	102		90 - 110	P	5/14/2015	10:21	051415A 30
CCV	Iron	2.528	2.500	101		90 - 110	P	5/14/2015	10:49	051415A 30
LLCCV	Iron	0.066	0.060	110		70 - 130	P	5/14/2015	10:56	051415A 30
ICV	Iron	0.963	1.000	96		90 - 110	P	5/15/2015	09:18	051515A 30
CCV	Iron	2.502	2.500	100		90 - 110	P	5/15/2015	09:29	051515A 30
CCV	Iron	2.494	2.500	100		90 - 110	P	5/15/2015	11:20	051515A 30
CCV	Iron	2.451	2.500	98		90 - 110	P	5/15/2015	12:04	051515A 30
CCV	Iron	2.479	2.500	99		90 - 110	P	5/15/2015	12:49	051515A 30

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Iron	2.477	2.500	99		90 - 110	P	5/15/2015	13:35	051515A 30
LLCCV										
	Iron	0.063	0.060	105		70 - 130	P	5/15/2015	13:42	051515A 30

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- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

AA CRDL Standard Source: High Purity

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.065	0.060	108		70 - 130	P	5/14/2015	08:30	051415A 3
CRDL										
	Iron	0.061	0.060	102		70 - 130	P	5/15/2015	09:25	051515A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/14/2015	08:26	051415A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/14/2015	09:40	051415A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/14/2015	10:25	051415A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/14/2015	10:52	051415A 3015
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/15/2015	09:22	051515A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/15/2015	11:23	051515A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/15/2015	12:08	051515A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/15/2015	12:53	051515A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/15/2015	13:38	051515A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2176948			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/14/2015	08:52	051415A 3015
2177666			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/15/2015	12:11	051515A 3015_

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	117.6	125.0	94		80 - 120%	5/14/2015	08:40	051415A 3015
ICSAB									
	Iron	118.2	125.0	95		80 - 120%	5/14/2015	08:44	051415A 3015
ICSA									
	Iron	119.7	125.0	96		80 - 120%	5/14/2015	11:00	051415A 3015
ICSAB									
	Iron	120.5	125.0	96		80 - 120%	5/14/2015	11:03	051415A 3015
ICSA									
	Iron	117.4	125.0	94		80 - 120%	5/15/2015	09:42	051515A 3015
ICSAB									
	Iron	118.1	125.0	94		80 - 120%	5/15/2015	09:46	051515A 3015
ICSA									
	Iron	114.6	125.0	92		80 - 120%	5/15/2015	13:46	051515A 3015
ICSAB									
	Iron	115.4	125.0	92		80 - 120%	5/15/2015	13:49	051515A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2176949									
	Iron	mg/L	1.11	1.109		100		80 - 120	P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2177667									
	Iron	mg/L	1.11	1.134		102		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500 2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72724						
2176948	MB for HBN 72724 [MDIG/50812	MB	QC-WAT	5/13/15	45.0	50.0	
2176949	LCS for HBN 72724 [MDIG/50812	LCS	QC-WAT	5/13/15	45.0	50.0	
2070129007	MRC-MW-96A-051115	SAM	WATER	5/13/15	45.0	50.0	
2070129008	MRC-MW-96B-051115	SAM	WATER	5/13/15	45.0	50.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72976						
2070129009	MRC-MW-02A-051115	SAM	WATER	5/14/15	45.0	50.0	
2070129010	MRC-DUP05-051115	SAM	WATER	5/14/15	45.0	50.0	
2177666	MB for HBN 72976 [MDIG/50836	MB	QC-WAT	5/14/15	45.0	50.0	
2177667	LCS for HBN 72976 [MDIG/50836	LCS	QC-WAT	5/14/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051415A 3015

Start Date: 5/14/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0801												X													
ICAL2	1.00	0805												X													
ICAL3	1.00	0809												X													
ICAL4	1.00	0812												X													
ICAL5	1.00	0816												X													
ICV1	1.00	0821												X													
ICB1	1.00	0826												X													
CRDL1	1.00	0830												X													
CCV1	1.00	0833												X													
HIGH	1.00	0837												X													
ICS-A1	1.00	0840												X													
ICS-AB1	1.00	0844												X													
2176948	1.00	0852												X													
2176949	1.00	0856												X													
ZZZZZZ	1.00	0859																									
ZZZZZZ	1.00	0903																									
ZZZZZZ	1.00	0907																									
ZZZZZZ	1.00	0911																									
ZZZZZZ	1.00	0914																									
ZZZZZZ	1.00	0918																									
ZZZZZZ	1.00	0921																									
ZZZZZZ	1.00	0933																									
CCV2	1.00	0937												X													
CCB1	1.00	0940												X													
ZZZZZZ	1.00	0944																									
ZZZZZZ	1.00	0948																									
ZZZZZZ	1.00	0952																									
ZZZZZZ	1.00	0955																									
ZZZZZZ	1.00	0959																									
ZZZZZZ	1.00	1003																									
ZZZZZZ	1.00	1007																									
ZZZZZZ	1.00	1010																									
ZZZZZZ	1.00	1014																									
ZZZZZZ	1.00	1018																									
CCV3	1.00	1021												X													
CCB2	1.00	1025												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051415A 3015

Start Date: 5/14/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1029																									
ZZZZZZ	1.00	1032																									
2070129007	1.00	1036												X													
2070129008	1.00	1040												X													
ZZZZZZ	1.00	1044																									
CCV4	1.00	1049												X													
CCB3	1.00	1052												X													
LLCCV	1.00	1056												X													
ICS-A2	1.00	1100												X													
ICS-AB2	1.00	1103												X													
ZZZZZZ	1.00	1131																									
ZZZZZZ	1.00	1135																									
ZZZZZZ	100.00	1139																									
ZZZZZZ	1.00	1144																									
ZZZZZZ	1.00	1147																									
ZZZZZZ	1.00	1151																									
ZZZZZZ	1.00	1154																									
ZZZZZZ	1.00	1158																									
ZZZZZZ	1.00	1202																									
ZZZZZZ	200.00	1206																									
ZZZZZZ	1.00	1211																									
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1222																									
ZZZZZZ	1.00	1226																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1317																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	5.00	1325																									
ZZZZZZ	5.00	1329																									
ZZZZZZ	5.00	1333																									
ZZZZZZ	5.00	1336																									
ZZZZZZ	5.00	1340																									
ZZZZZZ	5.00	1344																									
ZZZZZZ	5.00	1348																									
ZZZZZZ	5.00	1352																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051415A 3015

Start Date: 5/14/2015 End Date: 5/14/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1355																										
ZZZZZZ	1.00	1359																										
ZZZZZZ	5.00	1403																										
ZZZZZZ	5.00	1406																										
ZZZZZZ	5.00	1410																										
ZZZZZZ	5.00	1414																										
ZZZZZZ	5.00	1418																										
ZZZZZZ	5.00	1422																										
ZZZZZZ	5.00	1426																										
ZZZZZZ	5.00	1429																										
ZZZZZZ	5.00	1433																										
ZZZZZZ	5.00	1437																										
ZZZZZZ	1.00	1441																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	5.00	1448																										
ZZZZZZ	5.00	1452																										
ZZZZZZ	5.00	1456																										
ZZZZZZ	5.00	1500																										
ZZZZZZ	20.00	1503																										
ZZZZZZ	5.00	1512																										
ZZZZZZ	5.00	1515																										
ZZZZZZ	5.00	1519																										
ZZZZZZ	5.00	1523																										
ZZZZZZ	5.00	1527																										
ZZZZZZ	1.00	1531																										
ZZZZZZ	1.00	1534																										
ZZZZZZ	1.00	1538																										
ZZZZZZ	1.00	1542																										
ZZZZZZ	1.00	1546																										

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051515A 3015

Start Date: 5/15/2015 End Date: 5/15/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0900												X													
ICAL2	1.00	0904												X													
ICAL3	1.00	0907												X													
ICAL4	1.00	0911												X													
ICAL5	1.00	0915												X													
ICV1	1.00	0918												X													
ICB1	1.00	0922												X													
CRDL1	1.00	0925												X													
CCV1	1.00	0929												X													
HIGH	1.00	0932												X													
ZZZZZZ	1.00	0936																									
ICS-A2	1.00	0942												X													
ICS-AB1	1.00	0946												X													
ZZZZZZ	1.00	0952																									
ZZZZZZ	1.00	0955																									
ZZZZZZ	5.00	0959																									
ZZZZZZ	5.00	1003																									
ZZZZZZ	5.00	1007																									
ZZZZZZ	25.00	1010																									
ZZZZZZ	5.00	1014																									
ZZZZZZ	5.00	1018																									
ZZZZZZ	5.00	1022																									
ZZZZZZ	5.00	1025																									
ZZZZZZ	1.00	1029																									
ZZZZZZ	1.00	1033																									
ZZZZZZ	1.00	1040																									
ZZZZZZ	1.00	1044																									
ZZZZZZ	5.00	1047																									
ZZZZZZ	5.00	1051																									
ZZZZZZ	5.00	1056																									
ZZZZZZ	5.00	1100																									
ZZZZZZ	5.00	1104																									
ZZZZZZ	5.00	1108																									
ZZZZZZ	5.00	1112																									
ZZZZZZ	5.00	1116																									
CCV3	1.00	1120												X													

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051515A 3015

Start Date: 5/15/2015 End Date: 5/15/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB2	1.00	1123												X													
ZZZZZZ	1.00	1127																									
ZZZZZZ	1.00	1131																									
ZZZZZZ	5.00	1134																									
ZZZZZZ	1.00	1138																									
ZZZZZZ	1.00	1142																									
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1149																									
2070129009	1.00	1153												X													
2070129010	1.00	1157												X													
ZZZZZZ	1.00	1201																									
CCV4	1.00	1204												X													
CCB3	1.00	1208												X													
2177666	1.00	1211												X													
2177667	1.00	1215												X													
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1223																									
ZZZZZZ	1.00	1226																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1233																									
ZZZZZZ	1.00	1238																									
ZZZZZZ	1.00	1242																									
ZZZZZZ	1.00	1246																									
CCV5	1.00	1249												X													
CCB4	1.00	1253												X													
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1301																									
ZZZZZZ	1.00	1305																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1312																									
ZZZZZZ	1.00	1316																									
ZZZZZZ	1.00	1320																									
ZZZZZZ	1.00	1323																									
ZZZZZZ	1.00	1327																									
ZZZZZZ	1.00	1331																									
CCV6	1.00	1335												X													

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051515A 3015

Start Date: 5/15/2015 End Date: 5/15/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB5	1.00	1338												X													
LLCCV	1.00	1342												X													
ICS-A3	1.00	1346												X													
ICS-AB2	1.00	1349												X													
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1440																									
ZZZZZZ	1.00	1444																									
ZZZZZZ	1.00	1448																									
ZZZZZZ	1.00	1451																									

Total Mercury by 7470A Summary Forms

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0039	0.004	98		90 - 110	CV	5/18/2015	11:24	051815W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/18/2015	12:30	051815W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/18/2015	12:43	051815W

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- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/18/2015	11:25	051815W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/18/2015	12:31	051815W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/18/2015	12:45	051815W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2179170			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/18/2015	12:35	051815W

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070129010 **Client ID:** MRC-DUP05-051115S **LIMS ID:** 2179172

Percent Solids for Sample: 0.00 **Spiked ID:** 2070129010S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0048		0.0005	U	0.0050	96.00		CV

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- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070129010 **Client ID:** MRC-DUP05-051115SD **LIMS ID:** 2179173

Percent Solids for Sample: 0.00 **Spiked ID:** 2070129010SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0049		0.0005	U	0.0050	98.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070129010S **Client ID:** MRC-DUP05-051115SD **LIMS ID:** 2179173

Percent Solids for Sample: 0.00 **Duplicate ID:** 2070129010SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0048		0.0049		2.1		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2179171									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-032

Contract: TMM032|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	73503						
2179170	MB for HBN 73503 [MDIG/50884	MB	QC-WAT	5/18/15	25.0	25.0	
2179171	LCS for HBN 73503 [MDIG/50884	LCS	QC-WAT	5/18/15	25.0	25.0	
2070129007	MNRC-MW-96A-051115	SAM	WATER	5/18/15	25.0	25.0	
2070129008	MNRC-MW-96B-051115	SAM	WATER	5/18/15	25.0	25.0	
2070129009	MNRC-MW-02A-051115	SAM	WATER	5/18/15	25.0	25.0	
2070129010	MNRC-DUP05-051115	SAM	WATER	5/18/15	25.0	25.0	
2070129010S	MNRC-DUP05-051115S	MS	WATER	5/18/15	25.0	25.0	
2070129010SD	MNRC-DUP05-051115SD	MSD	WATER	5/18/15	25.0	25.0	

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Cetac Hg Method: CV Run Number: 051815W

Start Date: 5/18/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1118																X								
Standard #1 (0.2ppb	1.00	1119																X								
	1.00	1120																X								
	1.00	1121																X								
	1.00	1122																X								
	1.00	1123																X								
ICV1	1.00	1124																X								
ICB1	1.00	1125																X								
ZZZZZZ	1.00	1126																								
ZZZZZZ	1.00	1127																								
ZZZZZZ	1.00	1128																								
ZZZZZZ	1.00	1129																								
ZZZZZZ	1.00	1131																								
ZZZZZZ	1.00	1132																								
ZZZZZZ	1.00	1133																								
ZZZZZZ	1.00	1134																								
ZZZZZZ	1.00	1135																								
ZZZZZZ	1.00	1136																								
ZZZZZZ	1.00	1137																								
ZZZZZZ	1.00	1138																								
ZZZZZZ	1.00	1139																								
ZZZZZZ	1.00	1140																								
ZZZZZZ	1.00	1141																								
ZZZZZZ	1.00	1142																								
ZZZZZZ	1.00	1143																								
ZZZZZZ	1.00	1144																								
ZZZZZZ	1.00	1145																								
ZZZZZZ	1.00	1147																								
ZZZZZZ	1.00	1148																								
ZZZZZZ	1.00	1149																								
ZZZZZZ	1.00	1150																								
ZZZZZZ	1.00	1151																								
ZZZZZZ	1.00	1152																								
ZZZZZZ	1.00	1153																								
ZZZZZZ	1.00	1154																								
ZZZZZZ	1.00	1155																								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Cetac Hg Method: CV Run Number: 051815W

Start Date: 5/18/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1156																										
ZZZZZZ	1.00	1157																										
ZZZZZZ	1.00	1158																										
ZZZZZZ	1.00	1159																										
ZZZZZZ	1.00	1200																										
ZZZZZZ	1.00	1202																										
ZZZZZZ	1.00	1203																										
ZZZZZZ	1.00	1204																										
ZZZZZZ	1.00	1205																										
ZZZZZZ	1.00	1206																										
ZZZZZZ	1.00	1207																										
ZZZZZZ	1.00	1208																										
ZZZZZZ	1.00	1209																										
ZZZZZZ	1.00	1210																										
ZZZZZZ	1.00	1211																										
ZZZZZZ	1.00	1212																										
ZZZZZZ	1.00	1214																										
ZZZZZZ	1.00	1215																										
ZZZZZZ	1.00	1216																										
ZZZZZZ	1.00	1217																										
ZZZZZZ	1.00	1218																										
ZZZZZZ	1.00	1219																										
ZZZZZZ	1.00	1220																										
ZZZZZZ	1.00	1221																										
ZZZZZZ	1.00	1222																										
ZZZZZZ	1.00	1223																										
ZZZZZZ	1.00	1224																										
ZZZZZZ	1.00	1226																										
ZZZZZZ	1.00	1227																										
ZZZZZZ	1.00	1229																										
CCV5	1.00	1230																X										
CCB5	1.00	1231																X										
ZZZZZZ	1.00	1232																										
ZZZZZZ	1.00	1233																										
2179170	1.00	1235																X										
2179171	1.00	1236																X										

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM032|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-032

Instrument ID Number: Cetac Hg Method: CV Run Number: 051815W

Start Date: 5/18/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2070129007	1.00	1237																X									
2070129008	1.00	1238																X									
2070129009	1.00	1239																X									
2070129010	1.00	1240																X									
2070129010S	1.00	1241																X									
2070129010SD	1.00	1242																X									
CCV6	1.00	1243																X									
CCB6	1.00	1245																X									
ZZZZZZ	1.00	1246																										
ZZZZZZ	1.00	1247																										
ZZZZZZ	1.00	1248																										
ZZZZZZ	1.00	1249																										
ZZZZZZ	1.00	1250																										
ZZZZZZ	1.00	1251																										
ZZZZZZ	1.00	1252																										
ZZZZZZ	1.00	1253																										
ZZZZZZ	1.00	1254																										
ZZZZZZ	1.00	1255																										
ZZZZZZ	1.00	1256																										
ZZZZZZ	1.00	1257																										
ZZZZZZ	1.00	1258																										
ZZZZZZ	1.00	1259																										
ZZZZZZ	1.00	1300																										
ZZZZZZ	1.00	1301																										
ZZZZZZ	5.00	1315																										
ZZZZZZ	1.00	1316																										
ZZZZZZ	5.00	1317																										
ZZZZZZ	1.00	1320																										
ZZZZZZ	5.00	1321																										
ZZZZZZ	1.00	1323																										
ZZZZZZ	1.00	1324																										

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1513347**

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1566 (HBN: 148781)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 447081
Analyzed: 05/15/2015 13:11
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 447082
Analyzed: 05/15/2015 13:30
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.04	5.00	101	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1512733001	**MS:**	447083				**MSD:**	447084			
Analyzed:	05/15/2015 13:49	**Analyzed:**	05/15/2015 14:08				**Analyzed:**	05/15/2015 14:28			
Dilution:	1	**Dilution:**	1				**Dilution:**	1			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Perchlorate	0.230	4.2	5	* 79.4	85.3	112.8	4.44	84.0	5.39	0.0	20.0

Duplicate

Sample:	1512733001	**Duplicate:**	1512733002		
Analyzed:	05/15/2015 13:49	**Analyzed:**	05/15/2015 14:47		
Dilution:	1	**Dilution:**	1		
Units:	ug/L	**Units:**	ug/L		
Analyte	**Result**	**Result**	**RPD**	**QC Limits**	
Perchlorate	0.230	0.270	16.0	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513347

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/1566 (HBN: 148781)		
Analyzed By:	Thomas Bosch		

Continuing Calibration Verification

	CCV: 447077 Analyzed: 05/15/2015 11:55 Units: ug/L Criteria: ± 15%			CCV: 447085 Analyzed: 05/15/2015 17:38 Units: ug/L Criteria: ± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.7	25.0	103	25.4	25.0	102

Interference Check Sample

	ICSA: 447080 Analyzed: 05/15/2015 12:52 Units: ug/L Criteria: ± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.02	1.00	102

Limit of Detection Verification

	LODV: 447079 Analyzed: 05/15/2015 12:33 Units: ug/L Criteria: ± 50%			LODV: 447086 Analyzed: 05/15/2015 17:57 Units: ug/L Criteria: ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.136	0.100	136	0.144	0.100	144

Comments

The percent recoveries for the MS/MSD analyses failed QC acceptance criteria due to matrix effect.

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	5/20/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
● - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

LOCKHEED-MRC
WATER DATA
2070129

FRACTION	CHEMICAL	MRC-MW-02A-051115	UNITS	MRC-DUP05-051115	RPD	D
M	ARSENIC	0.0012 J	MG/L	0.0011 J	8.70	0.00
M	BARIUM	0.13	MG/L	0.13	0.00	0.00
M	BERYLLIUM	0.0063	MG/L	0.0063	0.00	0.00
M	CHROMIUM	0.0021 J	MG/L	0.0021 J	0.00	0.00
M	COBALT	0.11	MG/L	0.11	0.00	0.00
M	COPPER	0.11	MG/L	0.11	0.00	0.00
M	IRON	0.31	MG/L	0.29	6.67	0.02
M	MANGANESE	0.057	MG/L	0.056	1.77	0.00
M	NICKEL	0.15	MG/L	0.15	0.00	0.00
M	VANADIUM	0.0022 J	MG/L	0.0022 J	0.00	0.00
OV	DICHLORODIFLUOROMETHANE	1	UG/L	1	0.00	0.00
OV	TRICHLOROFLUOROMETHANE	4.5	UG/L	4.5	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

TETRA TECH INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **SEPTEMBER 9, 2015**

FROM: **LEIGH A. CIOFANI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION – VOC / DISSOLVED GASES / 1,4-DIOXANE / METALS / MISCELLANEOUS PARAMETERS**
LOCKHEED-MRC – FULL REVIEW
SAMPLE DELIVERY GROUP (SDG) 2070699

SAMPLES: 7 / Aqueous / VOC

MRC-MW-25A-051315	MRC-MW-41A-051315	MRC-MW-48A-051315
MRC-MW-74B-051315	MRC-MW-87A-051315	TB-051215
MRC-MW-DUP06-051315		

3 / Aqueous / Dissolved Gases

MRC-MW-24A-051315	MRC-MW-25A-051315	MRC-MW-48A-051315

3 / Aqueous / 1,4-Dioxane

MRC-MW-07A-051215	MRC-MW-25A-051315	MRC-MW-41A-051315

6 / Aqueous / Metals

MRC-MW-07A-051215	MRC-MW-24A-051315	MRC-MW-25A-051315
MRC-MW-41A-051315	MRC-MW-42A-051315	MRC-MW-48A-051315

5 / Aqueous / Miscellaneous Parameters

MRC-MW-24A-051315	MRC-MW-25A-051315	MRC-MW-41A-051315
MRC-MW-48A-051315	MRC-MW-74B-051315	

OVERVIEW

The sample set for Lockheed-MRC, SDG 2070699, consists of nine (9) aqueous environmental samples and one trip blank. The trip blank was analyzed for volatile organic compounds (VOCs) only. Environmental samples were analyzed for VOCs, dissolved gases, 1,4-dioxane, metals (total), and miscellaneous parameters. One field duplicate pair is included in this SDG: MRC-MW-87A-051315 (original) / MRC-MW-DUP06 (duplicate).

The samples were collected by Tetra Tech, Inc. on May 12 and 13, 2015 and analyzed by Test America, Inc. Analyses were conducted in accordance to SW-846 Methods 8260C (VOCs), 6010C (iron), 7470A (mercury), 6020A (other metals), 6850 (perchlorate), and 9060A (total organic carbon), and RSK-157 (dissolved gases), EPA Method 522 (1,4-dioxane), A2320 (alkalinity), 300.0 (anions), 365.3 (orthophosphate), 4500 NH3 C-1997 (ammonia), and SM2540C (total dissolved solids) analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory

method/trip blank results, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, internal standard recoveries, field duplicate precision, compound identification, compound quantitation, and detection limits. Areas of concern with respect to data quality are listed below.

MAJOR PROBLEMS

- None.

MINOR PROBLEMS

- The results for cis-1,2-dichloroethene and trichloroethene in sample MRC-MW-48A-051315 exceeded the instrument calibration range. These exceedances were marked by the data validator on the Form I reports. Sample MRC-MW-74B-051315 was reanalyzed at a dilution factor of 25, and the results for cis-1,2-dichloroethene and trichloroethene were reported from the dilution. Remaining results for this sample were reported from the original analysis.

- The results for cis-1,2-dichloroethene and trichloroethene in sample MRC-MW-74B-051315 exceeded the instrument calibration range. These exceedances were marked by the data validator on the Form I reports. Sample MRC-MW-74B-051315 was reanalyzed at a dilution factor of 100, and the result for cis-1,2-dichloroethene was reported from this dilution. However, the result for trichloroethene exceeded the instrument calibration range when analyzed at a dilution factor of 100; therefore, sample MRC-MW-74B-051315 was reanalyzed at a dilution factor of 500, and the result for trichloroethene was reported from this analysis. Remaining results for this sample were reported from the original analysis.

- The continuing calibration performed on 05/15/15 at 11:47 on instrument ms03.i had a percent difference (%D) for 1,4-dioxane that was greater than the 20% quality control limit. Samples TB-051215, MRC-MW-25A-051315, MRC-MW-74B-051315, and MRC-MW-48A-051315 were affected. The non-detected results of the aforementioned analytes were qualified as estimated (UJ) in the affected samples.

- The following VOC contaminants were detected in the method/trip blanks at the following maximum concentrations:

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane(1)	0.51	2.55
Carbon disulfide(1)	0.39	1.95
1,4-Dichlorobenzene(1)	0.31	1.55
Chlorobenzene(2)	0.25	1.25
2-Butanone(3)	4.6	46
Acetone(3)	5.4	54

(1) Maximum concentration detected in method blank 2180033 (MB) associated with batch 74011 affecting samples MRC-MW-DUP06-051315, MRC-MW-87A-051315, MRC-MW-41A-051315, MRC-MW-48A-051315 at a dilution factor of 25, and MRC-MW-74B-051315 at a dilution factor of 100.
(2) Maximum concentration detected in method blank 2181443 (MB) associated with batch 74523 affecting the reanalysis of sample MRC-MW-74B-051315 at a dilution factor of 500.
(3) Maximum concentration detected in trip blank TB-051215 affecting all samples.

Action levels of 10x the concentrations of the common laboratory contaminants 2-butanone and acetone and 5x the concentrations of remaining contaminants were used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were considered in evaluating for blank contamination. Detected results less than action levels were qualified as non-detected (U) due to blank contamination.

- The internal standard area of Ge-72 was greater than the 125% quality control limit in sample MRC-MW-42A-051315. The detected and nondetected results associated with this internal standard were qualified as estimated (J and UJ, respectively).

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

NOTES

Samples MRC-MW-59A-051215 and MRC-MW-57A-051215 were listed on the chain of custody, but results for these samples were not included in the laboratory data package. The laboratory report states that analyses for these samples were cancelled by the sampler. This laboratory statement is included in Appendix C of this report. No action was taken.

The laboratory report did not originally include the wet chemistry section for the miscellaneous parameters. The laboratory was contacted by the data validator and supplied a revised report that included the forms for the wet chemistry section at a later date.

As stated above, the laboratory reanalyzed VOC samples MRC-MW-48A-051315 and MRC-MW-74B-051315 at dilution factors greater than 1 due to results for cis-1,2-dichloroethene and trichloroethene exceeding the calibration range in the original analyses. Therefore, cis-1,2-dichloroethene and trichloroethene in sample MRC-MW-48A-051315 were analyzed at a dilution factor of 25, cis-1,2-dichloroethene in sample MRC-MW-74B-051315 was analyzed at a dilution factor of 100, and trichloroethene in sample MRC-MW-74B-051315 was analyzed at a dilution factor of 500. The correct results to be presented in the database were selected by the data validator to ensure that the correct dilution factors were shown for these results.

Sample TB-051215 is listed with the SDG number as a suffix (TB-051215-2070699) in the database. No action was taken.

The laboratory case narrative reports that a relative percent difference (RPD) of 186% for methane for the laboratory duplicate and sample MRC-MW-25A-051315 in the dissolved gases fraction. This was based on a concentration of 302 ug/L in the sample; however, this result is for sample MRC-MW-24A-051315. When calculated using the result for methane from sample MRC-MW-25A-051315 (11.4 ug/L), the RPD is approximately 4.5%, which is less than the quality control limit of 20%. Therefore, no validation action was taken.

Manganese in samples MRC-MW-41A-051315 and MRC-MW-48A-051315 were analyzed at a dilution factor of 5.

Contamination was detected in the method blanks for the metals fraction as follows:

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum(1)	0.00082	0.0041

(1) Maximum concentration detected in method blank 2177674 associated with batch 72978.

An action level of 5x the concentration of the contaminant was used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were considered in evaluating for blank contamination. No action was necessary, as all results for molybdenum were non-detected in the affected samples.

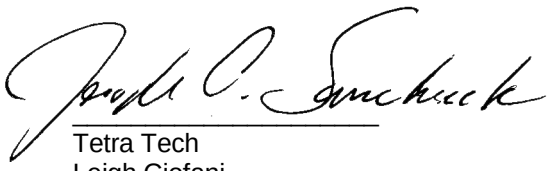
Non-detected results were reported to the RL.

EXECUTIVE SUMMARY

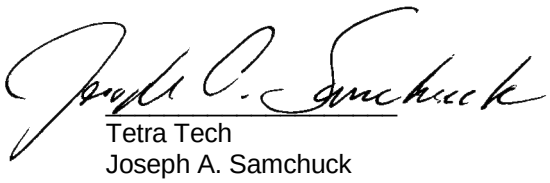
Laboratory Performance Issues: Some non-detected VOC results were qualified as due to calibration noncompliance. Some VOC results were qualified due to laboratory blank contamination. Some metals results were qualified due to internal standard recovery noncompliance.

Other Factors Affecting Data Quality: Detected results reported below the RL but above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the USEPA National Functional Guidelines for Organic Data Review (June 2008) and the National Functional Guidelines for Inorganic Review (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.



Tetra Tech
Leigh Ciofani
for Environmental Scientist/Data Validator



Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 06247	NSAMPLE	MRC-MW-25A-051315			MRC-MW-41A-051315			MRC-MW-48A-051315			MRC-MW-48A-051315-DL		
SDG: 2070699	LAB_ID	2070699005			2070699012			2070699010			2070699010		
FRACTION: OV	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U				
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U				
1,1,2-TRICHLOROETHANE		1	U		1	U		0.7	J	P			
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U				
1,1-DICHLOROETHANE		1	U		1	U		1	U				
1,1-DICHLOROETHENE		0.58	J	P	1	U		21					
1,2,3-TRICHLOROBENZENE		2	U		2	U		2	U				
1,2,4-TRICHLOROBENZENE		2	U		2	U		2	U				
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U		7	U				
1,2-DIBROMOETHANE		1	U		1	U		1	U				
1,2-DICHLOROBENZENE		1	U		1	U		1	U				
1,2-DICHLOROETHANE		1	U		1	U		1	U				
1,2-DICHLOROPROPANE		1	U		1	U		1	U				
1,3-DICHLOROBENZENE		1	U		1	U		1	U				
1,4-DICHLOROBENZENE		1	U		1	U		1	U				
1,4-DIOXANE		320	UJ	C	320	U		320	UJ	C			
2-BUTANONE		10	U		10	U		10	U				
2-HEXANONE		5	U		5	U		5	U				
4-METHYL-2-PENTANONE		5	U		5	U		5	U				
ACETONE		10	U		10	U		12	U	B			
BENZENE		0.69	J	P	1	U		0.44	J	P			
BROMOCHLOROMETHANE		1	U		1	U		1	U				
BROMODICHLOROMETHANE		1	U		1	U		1	U				
BROMOFORM		1	U		1	U		1	U				
BROMOMETHANE		1	U		0.42	U	A	1	U				
CARBON DISULFIDE		1	U		1	U		2.4					
CARBON TETRACHLORIDE		1	U		1	U		1	U				
CHLOROBENZENE		1	U		1	U		1	U				
CHLORODIBROMOMETHANE		1	U		1	U		1	U				
CHLOROETHANE		1	U		1	U		1	U				
CHLOROFORM		1	U		1	U		1	U				
CHLOROMETHANE		1	U		0.49	J	P	1	U				
CIS-1,2-DICHLOROETHENE		9.2			1	U					2190		
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U				
CYCLOHEXANE		1	U		1	U		0.85	J	P			

PROJ_NO: 06247	NSAMPLE	MRC-MW-74B-051315			MRC-MW-74B-051315-DL			MRC-MW-74B-051315-DL1			MRC-MW-87A-051315		
SDG: 2070699	LAB_ID	2070699008			2070699008			2070699008			2070699007		
FRACTION: OV	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U								1	U	
1,1,2,2-TETRACHLOROETHANE		1	U								1	U	
1,1,2-TRICHLOROETHANE		0.43	J	P							1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		106									1	U	
1,1-DICHLOROETHANE		1	U								1	U	
1,1-DICHLOROETHENE		3.3									1	U	
1,2,3-TRICHLOROBENZENE		2	U								2	U	
1,2,4-TRICHLOROBENZENE		2	U								2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U								7	U	
1,2-DIBROMOETHANE		1	U								1	U	
1,2-DICHLOROBENZENE		1	U								1	U	
1,2-DICHLOROETHANE		1	U								1	U	
1,2-DICHLOROPROPANE		1	U								1	U	
1,3-DICHLOROBENZENE		1	U								1	U	
1,4-DICHLOROBENZENE		0.95	J	P							1	U	
1,4-DIOXANE		320	UJ	C							320	U	
2-BUTANONE		10	U								10	U	
2-HEXANONE		5	U								5	U	
4-METHYL-2-PENTANONE		5	U								5	U	
ACETONE		10	U								10	U	
BENZENE		1	U								1	U	
BROMOCHLOROMETHANE		1	U								1	U	
BROMODICHLOROMETHANE		1	U								1	U	
BROMOFORM		1	U								1	U	
BROMOMETHANE		1	U								1	U	
CARBON DISULFIDE		1	U								1	U	
CARBON TETRACHLORIDE		1	U								1	U	
CHLOROBENZENE		6.3									1	U	
CHLORODIBROMOMETHANE		1	U								1	U	
CHLOROETHANE		1	U								1	U	
CHLOROFORM		7									1	U	
CHLOROMETHANE		1	U								0.49	J	P
CIS-1,2-DICHLOROETHENE					500						1	U	
CIS-1,3-DICHLOROPROPENE		1	U								1	U	
CYCLOHEXANE		1	U								1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP06-051315			TB-051215-2070699		
SDG: 2070699	LAB_ID	2070699006			2070699001		
FRACTION: OV	SAMP_DATE	5/13/2015			5/12/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	MRC-MW-87A-051315					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U	
1,2-DIBROMOETHANE		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U	
1,4-DIOXANE		320	U		320	UJ	C
2-BUTANONE		10	U		4.6	J	P
2-HEXANONE		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U	
ACETONE		10	U		5.4	J	P
BENZENE		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U	
BROMOFORM		1	U		1	U	
BROMOMETHANE		1	U		1	U	
CARBON DISULFIDE		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U	
CHLOROBENZENE		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U	
CHLOROETHANE		1	U		1	U	
CHLOROFORM		1	U		1	U	
CHLOROMETHANE		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U	
CYCLOHEXANE		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-25A-051315			MRC-MW-41A-051315			MRC-MW-48A-051315			MRC-MW-48A-051315-DL		
SDG: 2070699	LAB_ID	2070699005			2070699012			2070699010			2070699010		
FRACTION: OV	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U				
ETHYLBENZENE		1	U		1	U		1	U				
ISOPROPYLBENZENE		1	U		1	U		1.4					
M+P-XYLENES		2	U		2	U		2	U				
METHYL ACETATE		2	U		2	U		2	U				
METHYL CYCLOHEXANE		1	U		1	U		1	U				
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U				
METHYLENE CHLORIDE		1	U		1	U		1	U				
O-XYLENE		1	U		1	U		1.1					
STYRENE		1	U		1	U		1	U				
TETRACHLOROETHENE		1	U		1	U		1.7					
TOLUENE		1	U		1	U		0.69	J	P			
TRANS-1,2-DICHLOROETHENE		1	U		1	U		16.8					
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U				
TRICHLOROETHENE		147			1	U					378		
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U				
VINYL CHLORIDE		1	U		1	U		172					

PROJ_NO: 06247	NSAMPLE	MRC-MW-74B-051315			MRC-MW-74B-051315-DL			MRC-MW-74B-051315-DL1			MRC-MW-87A-051315		
SDG: 2070699	LAB_ID	2070699008			2070699008			2070699008			2070699007		
FRACTION: OV	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U								1	U	
ETHYLBENZENE		1	U								1	U	
ISOPROPYLBENZENE		1	U								1	U	
M+P-XYLENES		2	U								2	U	
METHYL ACETATE		2	U								2	U	
METHYL CYCLOHEXANE		1	U								1	U	
METHYL TERT-BUTYL ETHER		1	U								1	U	
METHYLENE CHLORIDE		2.5									1	U	
O-XYLENE		1	U								1	U	
STYRENE		1	U								1	U	
TETRACHLOROETHENE		1	U								1	U	
TOLUENE		1	U								1	U	
TRANS-1,2-DICHLOROETHENE		2.6									1	U	
TRANS-1,3-DICHLOROPROPENE		1	U								1	U	
TRICHLOROETHENE								21800			1	U	
TRICHLOROFLUOROMETHANE		1	U								1	U	
VINYL CHLORIDE		1	U								1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP06-051315			TB-051215-2070699		
SDG: 2070699	LAB_ID	2070699006			2070699001		
FRACTION: OV	SAMP_DATE	5/13/2015			5/12/2015		
MEDIA: WATER	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	MRC-MW-87A-051315					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U		1	U	
ETHYLBENZENE		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U	
M+P-XYLENES		2	U		2	U	
METHYL ACETATE		2	U		2	U	
METHYL CYCLOHEXANE		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U	
O-XYLENE		1	U		1	U	
STYRENE		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U	
TOLUENE		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U	
TRICHLOROETHENE		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U	
VINYL CHLORIDE		1	U		1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-07A-051215			MRC-MW-25A-051315			MRC-MW-41A-051315		
SDG: 2070699	LAB_ID	2070699002			2070699005			2070699012		
FRACTION: OS	SAMP_DATE	5/12/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		3.2			1.2			0.43		

PROJ_NO: 06247	NSAMPLE	MRC-MW-24A-051315			MRC-MW-25A-051315			MRC-MW-48A-051315		
SDG: 2070699	LAB_ID	2070699011			2070699005			2070699010		
FRACTION: OVG	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		1.2	J		3.3	U		41.9		
ETHENE		2.4	U		2.4	U		52.6		
METHANE		302			11.4			6160		

PROJ_NO: 06247	NSAMPLE	MRC-MW-24A-051315			MRC-MW-25A-051315			MRC-MW-41A-051315			MRC-MW-48A-051315		
SDG: 2070699	LAB_ID	2070699011			2070699005			1513562002			2070699010		
FRACTION: MISC	SAMP_DATE	5/13/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			UG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			199.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		3	J	P	66						143		
AMMONIA-N		0.37			0.15						0.07	J	P
CHLORIDE		515			431								
DISSOLVED ORGANIC CARBON		0.67	J	P	1.7						7.9		
NITRATE-N		0.15	J	P	0.5	U							
NITRITE-N		0.5	U		0.5	U							
ORTHOPHOSPHATE		0.02	U		0.02	U					0.02	U	
PERCHLORATE								0.06	U				
SULFATE		1.2	J	P	18.8								
TOTAL DISSOLVED SOLIDS		954			742						430		

PROJ_NO: 06247	NSAMPLE	MRC-MW-48A-051315-DL			MRC-MW-74B-051315		
SDG: 2070699	LAB_ID	2070699010			1513562001		
FRACTION: MISC	SAMP_DATE	5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			UG/L		
	PCT_SOLIDS	0.0			199.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY							
AMMONIA-N							
CHLORIDE		139					
DISSOLVED ORGANIC CARBON							
NITRATE-N		0.5	U				
NITRITE-N		0.5	U				
ORTHOPHOSPHATE							
PERCHLORATE					0.06	U	
SULFATE		2.3	J	P			
TOTAL DISSOLVED SOLIDS							

PROJ_NO: 06247	NSAMPLE	MRC-MW-07A-051215			MRC-MW-24A-051315			MRC-MW-25A-051315			MRC-MW-41A-051315		
SDG: 2070699	LAB_ID	2070699002			2070699011			2070699005			2070699012		
FRACTION: M	SAMP_DATE	5/12/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
ARSENIC		0.003	U		0.0036			0.003	U		0.003	U	
BARIUM		0.059			0.27			0.17			0.64		
BERYLLIUM		0.00039	J	P	0.031			0.00078	J	P	0.00065	J	P
CADMIUM		0.00098	J	P	0.0014			0.0011	U		0.0011	U	
CHROMIUM		0.0018	J	P	0.0012	J	P	0.0024			0.0013	J	P
COBALT		0.041			0.2			0.067			0.34		
COPPER		0.019			0.043			0.0045	J	P	0.0044	J	P
IRON		0.066	J	P	0.25			11.7			70		
LEAD		0.0022	U		0.0022	U		0.0017	J	P	0.0022	U	
MANGANESE		0.44			33.1			2.4			18.4		
MERCURY		0.0005	U		0.0005	U		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
NICKEL		0.2			0.69			0.084			0.22		
SELENIUM		0.0022	J	P	0.013			0.0056	U		0.0056	U	
SILVER		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
THALLIUM		0.001	U		0.001	U		0.001	U		0.001	U	
VANADIUM		0.0022	U		0.0022	U		0.002	J	P	0.0022	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-42A-051315			MRC-MW-48A-051315		
SDG: 2070699	LAB_ID	2070699009			2070699010		
FRACTION: M	SAMP_DATE	5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U	
ARSENIC		0.005	J	N	0.0012	J	P
BARIUM		0.76			0.47		
BERYLLIUM		0.013			0.0036		
CADMIUM		0.0011	UJ	N	0.0011	U	
CHROMIUM		0.0019	J	NP	0.0014	J	P
COBALT		0.31	J	N	0.1		
COPPER		0.0089	J	N	0.0056	U	
IRON		136			83.1		
LEAD		0.0022	U		0.0022	U	
MANGANESE		6.2	J	N	14.4		
MERCURY		0.0005	U		0.0005	U	
MOLYBDENUM		0.0022	UJ	N	0.0022	U	
NICKEL		0.39	J	N	0.051		
SELENIUM		0.013	J	N	0.0056	U	
SILVER		0.00076	J	NP	0.0022	U	
THALLIUM		0.001	U		0.001	U	
VANADIUM		0.0022	UJ	N	0.0022	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699001** Date Collected: 5/12/2015 00:00 Matrix: Water

Sample ID: **TB-051215** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	5.4J	J	ug/L	10.0	3.1	SW846 8260C		5/15/15 14:36	DD	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:36	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:36	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:36	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 14:36	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 14:36	DD	A
2-Butanone	4.6J	J	ug/L	10.0	1.8	SW846 8260C		5/15/15 14:36	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:36	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:36	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 14:36	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 14:36	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 14:36	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:36	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:36	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 14:36	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:36	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 14:36	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 14:36	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 14:36	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 14:36	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:36	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:36	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 14:36	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:36	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:36	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 14:36	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 14:36	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 14:36	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 14:36	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 14:36	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 14:36	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 14:36	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 14:36	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 14:36	DD	A

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699001** Date Collected: 5/12/2015 00:00 Matrix: Water

Sample ID: **TB-051215** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/15/15 14:36	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 14:36	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:36	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 14:36	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/15/15 14:36	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 14:36	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/15/15 14:36	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/15/15 14:36	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 14:36	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 14:36	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 14:36	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 14:36	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/15/15 14:36	DD	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97		%	62 - 133	SW846 8260C		5/15/15 14:36	DD	A
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260C		5/15/15 14:36	DD	A
Dibromofluoromethane (S)	93.9		%	78 - 116	SW846 8260C		5/15/15 14:36	DD	A
Toluene-d8 (S)	103		%	76 - 127	SW846 8260C		5/15/15 14:36	DD	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699002** Date Collected: 5/12/2015 09:20 Matrix: Water

Sample ID: **MRC-MW-07A-051215** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES											
1,4-Dioxane	3.2		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 23:34	GEC	C1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	83.9		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 23:34	GEC	C1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Barium, Total	0.059		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Beryllium, Total	0.00039J	J	mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Cadmium, Total	0.00098J	J	mg/L	0.0011	0.00037	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Chromium, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Cobalt, Total	0.041		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Copper, Total	0.019		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Iron, Total	0.066J	J	mg/L	0.067	0.022	SW846 6010C	5/15/15	TSS	5/19/15 10:41	SRT	A1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Manganese, Total	0.44		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 14:29	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Nickel, Total	0.20		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Selenium, Total	0.0022J	J	mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:40	ZMC	A2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699003** Date Collected: 5/12/2015 11:10 Matrix: Water

Sample ID: **MRC-MW-59A-051215** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
ADMINISTRATIVE											
Sample Cancelled	Previous Collection								5/14/15 10:09	DJM	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699004** Date Collected: 5/12/2015 13:35 Matrix: Water

Sample ID: **MRC-MW-57A-051215** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
ADMINISTRATIVE											
Sample Cancelled	Previous Collection								5/14/15 10:06	DJM	

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699005** Date Collected: 5/13/2015 10:05 Matrix: Water

Sample ID: **MRC-MW-25A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 18:37	DD	A
Benzene	0.69J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 18:37	DD	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:37	DD	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 18:37	DD	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 18:37	DD	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 18:37	DD	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 18:37	DD	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 18:37	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:37	DD	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 18:37	DD	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 18:37	DD	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:37	DD	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 18:37	DD	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:37	DD	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 18:37	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 18:37	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 18:37	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 18:37	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 18:37	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 18:37	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 18:37	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 18:37	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:37	DD	A
1,1-Dichloroethene	0.58J	J	ug/L	1.0	0.29	SW846 8260C		5/15/15 18:37	DD	A
cis-1,2-Dichloroethene	9.2		ug/L	1.0	0.32	SW846 8260C		5/15/15 18:37	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 18:37	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 18:37	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 18:37	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 18:37	DD	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 18:37	DD	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 18:37	DD	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 18:37	DD	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 18:37	DD	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 18:37	DD	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 18:37	DD	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 18:37	DD	A

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699005** Date Collected: 5/13/2015 10:05 Matrix: Water

Sample ID: **MRC-MW-25A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 18:37	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 18:37	DD	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 18:37	DD	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 18:37	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 18:37	DD	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/15/15 18:37	DD	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/15/15 18:37	DD	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 18:37	DD	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 18:37	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 18:37	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 18:37	DD	A
Trichloroethene	147		ug/L	1.0	0.33	SW846 8260C			5/15/15 18:37	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 18:37	DD	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/15/15 18:37	DD	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 18:37	DD	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 18:37	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.8		%	62 - 133		SW846 8260C			5/15/15 18:37	DD	A
4-Bromofluorobenzene (S)	110		%	79 - 114		SW846 8260C			5/15/15 18:37	DD	A
Dibromofluoromethane (S)	93.6		%	78 - 116		SW846 8260C			5/15/15 18:37	DD	A
Toluene-d8 (S)	102		%	76 - 127		SW846 8260C			5/15/15 18:37	DD	A
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			5/15/15 10:32	KJH	I
Ethene	ND		ug/L	2.4	0.40	RSK 175			5/15/15 10:32	KJH	I
Methane	11.4		ug/L	1.5	0.34	RSK 175			5/15/15 10:32	KJH	I
SEMIVOLATILES											
1,4-Dioxane	1.2		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 15:18	GEC	M1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 15:18	GEC	M1
WET CHEMISTRY											
Alkalinity, Total	66		mg/L	5	0.8	S2320B-97			5/14/15 11:14	MBW	F
Ammonia-nitrogen, Total	0.15		mg/L	0.10	0.04	S4500NH3D	5/19/15	J1H	5/20/15 06:29	J1H	G
Chloride	431		mg/L	5.0	0.31	EPA 300.0			5/14/15 04:41	SSL	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			5/14/15 04:41	SSL	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			5/14/15 04:41	SSL	H

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699005** Date Collected: 5/13/2015 10:05 Matrix: Water

Sample ID: **MRC-MW-25A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3		5/15/15 05:20	MBW	H
Sulfate	18.8		mg/L	5.0	0.32	EPA 300.0		5/14/15 04:41	SSL	H
Total Dissolved Solids	742		mg/L	5	5	S2540C-11		5/16/15 09:50	ARK	H
Total Organic Carbon-Dissolved	1.7		mg/L	1.0	0.16	SW846 9060A		5/20/14 13:04	PAG	L
METALS										
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Barium, Total	0.17		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Beryllium, Total	0.00078J	J	mg/L	0.0010	0.00030	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Chromium, Total	0.0024		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Cobalt, Total	0.067		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Copper, Total	0.0045J	J	mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Iron, Total	11.7		mg/L	0.067	0.022	SW846 6010C	5/19/15 AAM	5/20/15 10:35	SRT	D2
Lead, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Manganese, Total	2.4		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15 MNP	5/21/15 14:30	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Nickel, Total	0.084		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1
Vanadium, Total	0.0020J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:44	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699006** Date Collected: 5/13/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP06-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/19/15 23:10	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:10	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:10	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:10	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/19/15 23:10	CJG	B
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/19/15 23:10	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/19/15 23:10	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:10	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:10	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/19/15 23:10	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 23:10	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/19/15 23:10	CJG	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:10	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:10	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/19/15 23:10	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:10	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/19/15 23:10	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/19/15 23:10	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:10	CJG	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:10	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:10	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:10	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:10	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:10	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:10	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:10	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:10	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/19/15 23:10	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 23:10	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:10	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/19/15 23:10	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 23:10	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/19/15 23:10	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 23:10	CJG	B

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699006** Date Collected: 5/13/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP06-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/19/15 23:10	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 23:10	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:10	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 23:10	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/19/15 23:10	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:10	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/19/15 23:10	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/19/15 23:10	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 23:10	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:10	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 23:10	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:10	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/19/15 23:10	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.3		%	62 - 133	SW846 8260C		5/19/15 23:10	CJG	B
4-Bromofluorobenzene (S)	92.3		%	79 - 114	SW846 8260C		5/19/15 23:10	CJG	B
Dibromofluoromethane (S)	92.6		%	78 - 116	SW846 8260C		5/19/15 23:10	CJG	B
Toluene-d8 (S)	95		%	76 - 127	SW846 8260C		5/19/15 23:10	CJG	B

Debra J Musser

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Project Coordinator

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699007** Date Collected: 5/13/2015 11:20 Matrix: Water

Sample ID: **MRC-MW-87A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/19/15 23:27	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:27	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:27	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:27	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/19/15 23:27	CJG	B
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/19/15 23:27	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/19/15 23:27	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:27	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:27	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/19/15 23:27	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 23:27	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/19/15 23:27	CJG	B
Chloromethane	0.49J	J	ug/L	1.0	0.31	SW846 8260C		5/19/15 23:27	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:27	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/19/15 23:27	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:27	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/19/15 23:27	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/19/15 23:27	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:27	CJG	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:27	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:27	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:27	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:27	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:27	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:27	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:27	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:27	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/19/15 23:27	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 23:27	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:27	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/19/15 23:27	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 23:27	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/19/15 23:27	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 23:27	CJG	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699007** Date Collected: 5/13/2015 11:20 Matrix: Water

Sample ID: **MRC-MW-87A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/19/15 23:27	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 23:27	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:27	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 23:27	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/19/15 23:27	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:27	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/19/15 23:27	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/19/15 23:27	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 23:27	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:27	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 23:27	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:27	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/19/15 23:27	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.8		%	62 - 133	SW846 8260C		5/19/15 23:27	CJG	B
4-Bromofluorobenzene (S)	91.8		%	79 - 114	SW846 8260C		5/19/15 23:27	CJG	B
Dibromofluoromethane (S)	91.9		%	78 - 116	SW846 8260C		5/19/15 23:27	CJG	B
Toluene-d8 (S)	94.8		%	76 - 127	SW846 8260C		5/19/15 23:27	CJG	B

Debra J Musser

Ms. Debra J. Musser
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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699008** Date Collected: 5/13/2015 13:05 Matrix: Water

Sample ID: **MRC-MW-74B-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/15/15 19:43	DD	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 19:43	DD	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 19:43	DD	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 19:43	DD	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 19:43	DD	B
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 19:43	DD	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 19:43	DD	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 19:43	DD	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 19:43	DD	B
Chlorobenzene	6.3		ug/L	1.0	0.19	SW846 8260C		5/15/15 19:43	DD	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 19:43	DD	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 19:43	DD	B
Chloroform	7.0		ug/L	1.0	0.21	SW846 8260C		5/15/15 19:43	DD	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 19:43	DD	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 19:43	DD	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 19:43	DD	B
1,4-Dichlorobenzene	0.95J	J	ug/L	1.0	0.27	SW846 8260C		5/15/15 19:43	DD	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 19:43	DD	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 19:43	DD	B
1,1-Dichloroethene	3.3		ug/L	1.0	0.29	SW846 8260C		5/15/15 19:43	DD	B
cis-1,2-Dichloroethene	500		ug/L	100	32.0	SW846 8260C		5/20/15 00:53	CJG	C
trans-1,2-Dichloroethene	2.6		ug/L	1.0	0.26	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 19:43	DD	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 19:43	DD	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 19:43	DD	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 19:43	DD	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 19:43	DD	B
Freon 113	106		ug/L	1.0	0.26	SW846 8260C		5/15/15 19:43	DD	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 19:43	DD	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 19:43	DD	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 19:43	DD	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 19:43	DD	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699008** Date Collected: 5/13/2015 13:05 Matrix: Water

Sample ID: **MRC-MW-74B-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 19:43	DD	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/15/15 19:43	DD	B
Methylene Chloride	2.5		ug/L	1.0	0.45	SW846 8260C		5/15/15 19:43	DD	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 19:43	DD	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 19:43	DD	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/15/15 19:43	DD	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/15/15 19:43	DD	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/15/15 19:43	DD	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/15/15 19:43	DD	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/15/15 19:43	DD	B
1,1,2-Trichloroethane	0.43J	J	ug/L	1.0	0.33	SW846 8260C		5/15/15 19:43	DD	B
Trichloroethene	21800		ug/L	500	165	SW846 8260C		5/22/15 04:59	CJG	C
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 19:43	DD	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 19:43	DD	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 19:43	DD	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/15/15 19:43	DD	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.5		%	62 - 133	SW846 8260C		5/15/15 19:43	DD	B
1,2-Dichloroethane-d4 (S)	99.6		%	62 - 133	SW846 8260C		5/20/15 00:53	CJG	C
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260C		5/22/15 04:59	CJG	C
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260C		5/15/15 19:43	DD	B
4-Bromofluorobenzene (S)	89.5		%	79 - 114	SW846 8260C		5/20/15 00:53	CJG	C
4-Bromofluorobenzene (S)	87.4		%	79 - 114	SW846 8260C		5/22/15 04:59	CJG	C
Dibromofluoromethane (S)	94		%	78 - 116	SW846 8260C		5/20/15 00:53	CJG	C
Dibromofluoromethane (S)	93.7		%	78 - 116	SW846 8260C		5/15/15 19:43	DD	B
Dibromofluoromethane (S)	94		%	78 - 116	SW846 8260C		5/22/15 04:59	CJG	C
Toluene-d8 (S)	92.7		%	76 - 127	SW846 8260C		5/20/15 00:53	CJG	C
Toluene-d8 (S)	99.4		%	76 - 127	SW846 8260C		5/15/15 19:43	DD	B
Toluene-d8 (S)	91.7		%	76 - 127	SW846 8260C		5/22/15 04:59	CJG	C

SUBCONTRACTED ANALYSIS

Subcontracted Analysis	See attached				Subcontract		5/26/15 11:36	SUB	E

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699008** Date Collected: 5/13/2015 13:05 Matrix: Water

Sample ID: **MRC-MW-74B-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699009** Date Collected: 5/13/2015 09:25 Matrix: Water

Sample ID: **MRC-MW-42A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Arsenic, Total	0.0050		mg/L	0.0030	0.0010	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Barium, Total	0.76		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Beryllium, Total	0.013		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Chromium, Total	0.0019J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Cobalt, Total	0.31		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Copper, Total	0.0089		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Iron, Total	136		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 10:46	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Manganese, Total	6.2		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 14:31	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Nickel, Total	0.39		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Selenium, Total	0.013		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Silver, Total	0.00076J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:48	ZMC	A1

Debra J Musser

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699010** Date Collected: 5/13/2015 10:40 Matrix: Water

Sample ID: **MRC-MW-48A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	12.0		ug/L	10.0	3.1	SW846 8260C		5/15/15 20:04	DD	B
Benzene	0.44J	J	ug/L	1.0	0.23	SW846 8260C		5/15/15 20:04	DD	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 20:04	DD	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 20:04	DD	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/15/15 20:04	DD	B
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/15/15 20:04	DD	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/15/15 20:04	DD	B
Carbon Disulfide	2.4		ug/L	1.0	0.23	SW846 8260C		5/15/15 20:04	DD	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 20:04	DD	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/15/15 20:04	DD	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/15/15 20:04	DD	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 20:04	DD	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/15/15 20:04	DD	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 20:04	DD	B
Cyclohexane	0.85J	J	ug/L	1.0	0.29	SW846 8260C		5/15/15 20:04	DD	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/15/15 20:04	DD	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 20:04	DD	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/15/15 20:04	DD	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/15/15 20:04	DD	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/15/15 20:04	DD	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/15/15 20:04	DD	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/15/15 20:04	DD	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/15/15 20:04	DD	B
1,1-Dichloroethene	21.0		ug/L	1.0	0.29	SW846 8260C		5/15/15 20:04	DD	B
cis-1,2-Dichloroethene	2190		ug/L	25.0	8.0	SW846 8260C		5/20/15 00:02	CJG	C
trans-1,2-Dichloroethene	16.8		ug/L	1.0	0.26	SW846 8260C		5/15/15 20:04	DD	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/15/15 20:04	DD	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/15/15 20:04	DD	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/15/15 20:04	DD	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/15/15 20:04	DD	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/15/15 20:04	DD	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/15/15 20:04	DD	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/15/15 20:04	DD	B
Isopropylbenzene	1.4		ug/L	1.0	0.22	SW846 8260C		5/15/15 20:04	DD	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/15/15 20:04	DD	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/15/15 20:04	DD	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699010** Date Collected: 5/13/2015 10:40 Matrix: Water

Sample ID: **MRC-MW-48A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/15/15 20:04	DD	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/15/15 20:04	DD	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/15/15 20:04	DD	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 20:04	DD	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/15/15 20:04	DD	B
Tetrachloroethene	1.7		ug/L	1.0	0.35	SW846 8260C			5/15/15 20:04	DD	B
Toluene	0.69J	J	ug/L	1.0	0.23	SW846 8260C			5/15/15 20:04	DD	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/15/15 20:04	DD	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/15/15 20:04	DD	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/15/15 20:04	DD	B
1,1,2-Trichloroethane	0.70J	J	ug/L	1.0	0.33	SW846 8260C			5/15/15 20:04	DD	B
Trichloroethene	378		ug/L	25.0	8.3	SW846 8260C			5/20/15 00:02	CJG	C
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/15/15 20:04	DD	B
Vinyl Chloride	172		ug/L	1.0	0.30	SW846 8260C			5/15/15 20:04	DD	B
o-Xylene	1.1		ug/L	1.0	0.33	SW846 8260C			5/15/15 20:04	DD	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/15/15 20:04	DD	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.7		%	62 - 133		SW846 8260C			5/15/15 20:04	DD	B
1,2-Dichloroethane-d4 (S)	95.7		%	62 - 133		SW846 8260C			5/20/15 00:02	CJG	C
4-Bromofluorobenzene (S)	89.9		%	79 - 114		SW846 8260C			5/20/15 00:02	CJG	C
4-Bromofluorobenzene (S)	113		%	79 - 114		SW846 8260C			5/15/15 20:04	DD	B
Dibromofluoromethane (S)	93.5		%	78 - 116		SW846 8260C			5/20/15 00:02	CJG	C
Dibromofluoromethane (S)	94.5		%	78 - 116		SW846 8260C			5/15/15 20:04	DD	B
Toluene-d8 (S)	92.6		%	76 - 127		SW846 8260C			5/20/15 00:02	CJG	C
Toluene-d8 (S)	102		%	76 - 127		SW846 8260C			5/15/15 20:04	DD	B
LIGHT HYDROCARBON GASES											
Ethane	41.9		ug/L	3.3	0.23	RSK 175			5/15/15 11:21	KJH	I
Ethene	52.6		ug/L	2.4	0.40	RSK 175			5/15/15 11:21	KJH	I
Methane	6160		ug/L	1.5	0.34	RSK 175			5/15/15 11:21	KJH	I
WET CHEMISTRY											
Alkalinity, Total	143		mg/L	5	0.8	S2320B-97			5/14/15 11:24	MBW	F
Ammonia-nitrogen, Total	0.070J	J	mg/L	0.10	0.04	S4500NH3D	5/19/15	J1H	5/20/15 06:29	J1H	G
Chloride	139		mg/L	5.0	0.31	EPA 300.0			5/14/15 04:54	SSL	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			5/14/15 04:54	SSL	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			5/14/15 04:54	SSL	H
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			5/15/15 05:20	MBW	H

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699010** Date Collected: 5/13/2015 10:40 Matrix: Water

Sample ID: **MRC-MW-48A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Sulfate	2.3J	J	mg/L	5.0	0.32	EPA 300.0		5/14/15 04:54	SSL	H
Total Dissolved Solids	430		mg/L	5	5	S2540C-11		5/16/15 09:50	ARK	H
Total Organic Carbon-Dissolved	7.9		mg/L	1.0	0.16	SW846 9060A		5/20/14 13:04	PAG	L
METALS										
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Barium, Total	0.47		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Beryllium, Total	0.0036		mg/L	0.0010	0.00030	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Chromium, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Cobalt, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Iron, Total	83.1		mg/L	0.067	0.022	SW846 6010C	5/19/15 AAM	5/20/15 10:50	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Manganese, Total	14.4		mg/L	0.028	0.0095	SW846 6020A	5/17/15 AAM	5/18/15 02:32	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15 MNP	5/21/15 14:32	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Nickel, Total	0.051		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15 AAM	5/18/15 00:52	ZMC	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699011** Date Collected: 5/13/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-24A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
LIGHT HYDROCARBON GASES											
Ethane	1.2J	J	ug/L	3.3	0.23	RSK 175			5/15/15 12:33	KJH	F
Ethene	ND		ug/L	2.4	0.40	RSK 175			5/15/15 12:33	KJH	F
Methane	302		ug/L	1.5	0.34	RSK 175			5/15/15 12:33	KJH	F
WET CHEMISTRY											
Alkalinity, Total	3J	J	mg/L	5	0.8	S2320B-97			5/15/15 07:33	MBW	C
Ammonia-nitrogen, Total	0.37		mg/L	0.10	0.04	S4500NH3D	5/19/15	J1H	5/20/15 06:29	J1H	D
Chloride	515		mg/L	10.0	0.62	EPA 300.0			5/15/15 07:40	SSL	E
Nitrate-N	0.15J	J	mg/L	0.50	0.092	EPA 300.0			5/14/15 05:06	SSL	E
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			5/14/15 05:06	SSL	E
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			5/15/15 05:20	MBW	E
Sulfate	1.2J	J	mg/L	5.0	0.32	EPA 300.0			5/14/15 05:06	SSL	E
Total Dissolved Solids	954		mg/L	5	5	S2540C-11			5/16/15 09:50	ARK	E
Total Organic Carbon-Dissolved	0.67J	J	mg/L	1.0	0.16	SW846 9060A			5/20/14 13:04	PAG	I
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Arsenic, Total	0.0036		mg/L	0.0030	0.0010	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Barium, Total	0.27		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Beryllium, Total	0.031		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Cadmium, Total	0.0014		mg/L	0.0011	0.00037	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Chromium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Cobalt, Total	0.20		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Copper, Total	0.043		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Iron, Total	0.25		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:01	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Manganese, Total	33.1		mg/L	0.028	0.0095	SW846 6020A	5/17/15	AAM	5/18/15 02:36	ZMC	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 14:33	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Nickel, Total	0.69		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Selenium, Total	0.013		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:55	ZMC	A1

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699011** Date Collected: 5/13/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-24A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699012** Date Collected: 5/13/2015 13:55 Matrix: Water

Sample ID: **MRC-MW-41A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/19/15 23:45	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:45	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:45	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:45	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/19/15 23:45	CJG	B
Bromomethane	0.42J	J	ug/L	1.0	0.39	SW846 8260C		5/19/15 23:45	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/19/15 23:45	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/19/15 23:45	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:45	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/19/15 23:45	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/19/15 23:45	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:45	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/19/15 23:45	CJG	B
Chloromethane	0.49J	J	ug/L	1.0	0.31	SW846 8260C		5/19/15 23:45	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:45	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/19/15 23:45	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:45	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/19/15 23:45	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/19/15 23:45	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/19/15 23:45	CJG	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/19/15 23:45	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/19/15 23:45	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:45	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:45	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/19/15 23:45	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:45	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/19/15 23:45	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/19/15 23:45	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/19/15 23:45	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/19/15 23:45	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/19/15 23:45	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/19/15 23:45	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/19/15 23:45	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/19/15 23:45	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/19/15 23:45	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/19/15 23:45	CJG	B

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699012** Date Collected: 5/13/2015 13:55 Matrix: Water

Sample ID: **MRC-MW-41A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 23:45	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/19/15 23:45	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/19/15 23:45	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/19/15 23:45	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/19/15 23:45	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/19/15 23:45	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/19/15 23:45	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/19/15 23:45	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/19/15 23:45	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/19/15 23:45	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 23:45	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 23:45	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/19/15 23:45	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/19/15 23:45	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/19/15 23:45	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/19/15 23:45	CJG	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.6		%	62 - 133		SW846 8260C			5/19/15 23:45	CJG	B
4-Bromofluorobenzene (S)	87.2		%	79 - 114		SW846 8260C			5/19/15 23:45	CJG	B
Dibromofluoromethane (S)	93.4		%	78 - 116		SW846 8260C			5/19/15 23:45	CJG	B
Toluene-d8 (S)	93.9		%	76 - 127		SW846 8260C			5/19/15 23:45	CJG	B
SEMIVOLATILES											
1,4-Dioxane	0.43		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 15:43	GEC	G1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	85.5		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 15:43	GEC	G1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Barium, Total	0.64		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Beryllium, Total	0.00065J	J	mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Chromium, Total	0.0013J	J	mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Cobalt, Total	0.34		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Copper, Total	0.0044J	J	mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Iron, Total	70.0		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:05	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2070699 TMM033|112IL06247

Lab ID: **2070699012** Date Collected: 5/13/2015 13:55 Matrix: Water

Sample ID: **MRC-MW-41A-051315** Date Received: 5/13/2015 19:40

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	18.4		mg/L	0.028	0.0095	SW846 6020A	5/17/15	AAM	5/18/15 02:40	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 14:34	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Nickel, Total	0.22		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/17/15	AAM	5/18/15 00:59	ZMC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/26/15 12:34	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1513562
Client: ALS Environmental
Project Manage Kevin W. Griffiths

Analytical Results

MRC-MW-74B-051315

Sample ID: 2070699 008 | Sampling Site: NA | Collected: 05/13/2015
Lab ID: 1513562001 | Media: 250 mL Nalgene | Received: 05/15/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1567 (HBN: 149278) | **Percent Solid:** NA
Analyzed: 05/26/2015 11:36 | **Report Basis:** Wet

Analyte	Result (ug/L)	MDL (ug/L)	RL (ug/L)	Dilution	Qual
Perchlorate	ND	0.060	0.20	1	U

MRC-MW-41A-051315

Sample ID: 2070699 012 | Sampling Site: NA | Collected: 05/13/2015
Lab ID: 1513562002 | Media: 250 mL Nalgene | Received: 05/15/2015
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water | **Instrument ID:** LCMS04
Batch: ELMS/1567 (HBN: 149278) | **Percent Solid:** NA
Analyzed: 05/26/2015 12:34 | **Report Basis:** Wet

Analyte	Result (ug/L)	MDL (ug/L)	RL (ug/L)	Dilution	Qual
Perchlorate	ND	0.060	0.20	1	U

Report Authorization

(/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/27/2015 15:05	/S/ Thomas T. McKay 06/01/2015 14:06

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

APPENDIX C

SUPPORT DOCUMENTATION

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DJM

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1

2070699

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: Tetra Tech, 20251 Century Blvd. Ste. 200, Germantown, MD, 20874	
Phone #: 301-528-3000	Email: tony.apanavage@tetratech.com
Sampler's Signature: [signature]	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Containe

PRESERVATIVE: 1 7 0 1 0 2 3 0 0

Preservative Key: 0. NONE 1. HCL 2. HNO_3 3. H_2SO_4 4. NaOH 5. Zn. Acetate 6. MeOH 7. $NaHSO_4$ 8. Other

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP: VOCs (8260C)	GC/MS SVOAs ◦ 8270 ◦ 625: 1-4 dioxane (522)	GC VOAs ◦ 8021 ◦ 601/602: Perchlorate (6850)	PESTICIDES ◦ 8081 ◦ 608: MEE (RSK-175)	PCBs ◦ 8082 ◦ 608: Alkalinity (2320B)	METALS, TOTAL (List in comments below): (6020A)	METALS, DISSOLVED (List in comments below): NH3 (350.3)	Dissolved Organic Carbon (9060)	Cl, NO2, NO3, OPO4, SO4, TOS, Si (300.0)	REMARKS/ ALTERNATE DESCRIPTION
1	TB-050215		5/12/15	—	Aq	2	X	—	—	—	—	—	—	—	—	
2	MRC-MW-07A-051215		↓	0920	↓	2	—	X	—	—	—	X	—	—	—	
3	MRC-MW-59A-051215		↓	1110	↓	1	—	—	—	—	—	X	—	—	—	
4	MRC-MW-57A-051215		↓	1335	↓	4	X3	—	—	—	—	X	—	—	—	
5	MRC-MW-25A-051315		5/13/15	1005	↓	12	X3	X1	—	X3	X1	X1	X1	X1	X1	
6	MRC-MW-DUP06-051315		↓	—	↓	3	X	—	—	—	—	—	—	—	—	*DUPLICATE
7	MRC-MW-87A-051315		↓	1120	↓	3	X	—	—	—	—	—	—	—	—	
8	MRC-MW-74B-051315		↓	1305	↓	4	X	—	X	—	—	—	—	—	—	
9	MRC-MW-42A-051315		↓	0925	↓	1	—	—	—	—	—	X	—	—	—	
10	MRC-MW-48A-051315		↓	1040	↓	11	X	—	—	X	X	X	X	X	X	
11	MRC-MW-24A-051315		↓	1210	↓	8	—	—	—	X	X	X	X	X	X	24A

SPECIAL INSTRUCTIONS/COMMENTS

Metals

* 48 hour hold time for NO3, NO2 Samples AA
* SEE SCOPE FOR FULL METALS LIST
* ALL SAMPLES GO TO MIDDLETOWN, PA LAB

See QAPP ☐

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

____ 1 day ____ 2 day ____ 3 day ____ 4 day ____ 5 day

STANDARD

REQUESTED REPORT DATE

	Y	N	Initials
Custody Seals Present?		✓	LMG
(if present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?		✓	

Cooler Temp: 1 °C

Cooler #:

Therm ID: 221

Ship Carrier

FedEx UPS

DHL

Tracking #:

STATE WHERE SAMPLES WERE COLLECTED: * MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY		
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: Sam Schmitt
Printed Name: Josh Mullis	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name: Harcomp	Printed Name: Harcomp	Printed Name: Sam Schmitt
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5/13/15 1525	Date/Time: 1525	Date/Time: 1830 5/13/15	Date/Time: 5/13 1940	Date/Time: 5/13 1830	Date/Time: 5/13/15 1940

Distribution: White - Lab Copy; Yellow - Return to Originator

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SFS 5/13/15

LMG 05/14/15 0550

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

24915 099

ALS Environmental
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Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Aparavoge	Report CC:
Company/Address: Tetra Tech	
20251 Century Blvd. Ste. 200	
Germantown, MD, 20874	
Phone #: 301-528-3000	Email: Tony.aparavoge@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE: 1 7 0 — 2 —

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP (VOCs (8260))	GC/MS SVOAs ◦ 8270 ◦ 625 (1-4 dioxane (522))	PESTICIDES ◦ 8081 ◦ 608 (Perchlorate (6852))	PCBs ◦ 8082 ◦ 608	METALS: TOTAL (List in comments below) (6020A)	METALS: DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
12 MRC-MW-4/A-051315		5/13/15	1355	Aq	6	X	X	X	—	X	—	

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		TMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Therm ID: 237
Ship Carrier: FedEx UPS DHL ✓
Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS
Metals A SEE CHAIN I FOR INSTRUCTIONS

See QAPP ☐

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Josh Mullis	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name	Printed Name	Printed Name: Sam Schmitt
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5/13/15 1525	Date/Time: 5/13/15 1525	Date/Time: 1830 5/13/15	Date/Time: 5/13 1440	Date/Time: 5/13 1820	Date/Time: 5/13 1940

Distribution: White - Lab Copy; Yellow - Return to Originator

LMG 05/14/15 0950

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Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-033

Sample Management

This report contains the results of the analysis of twelve (12) water samples collected on May 12-13, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 13, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Two (2) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Eight (8) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2180033, bromomethane was detected at 0.51J µg/L; carbon disulfide was detected at 0.39J µg/L; 1,4-dichlorobenzene was detected at 0.31J µg/L.
- In 2181443, chlorobenzene was detected at 0.25J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

Light Hydrocarbon Gases by RSK-175

Sample Handling. Three (3) water samples were submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2178232, was prepared from project sample MRC-MW-25A-051315 (2070699005). Target analytes were detected as follows:

- Methane was detected at 302 µg/L in the sample and at 10.9 µg/L in the duplicate sample with a %RPD of 186%.

1,4-Dioxane by Method 522

Sample Handling. Three (3) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Matrix Spikes. A matrix spike and matrix spike duplicate, identified as 2184607 and 2184608, was prepared from project sample MRC-MW-07A (2070699002). Results for precision and accuracy were within control limits.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had a detectible level in the MB at 0.00082 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Six (6) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike and matrix spike duplicate identified as 2179720 and 2179721 were prepared and analyzed on sample 2070699005 (MRC-MW-25A-051315), in this deliverable group. All MS/MSD recoveries and their associated RPDs were within method control limits, except the following;

- The iron analyte concentration in the sample were greater than four times the concentration of our spiking solution. For this reason, spike recoveries were not calculated (NSC).

Total Mercury in Water by EPA Method 7470A

Sample handling. Six (6) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2070699012 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/22/2015

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

June 2, 2015

Ms. Amy Thomson
Tetra Tech, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Certificate of Analysis

Project Name:	**GW sampling**	Workorder:	**2070699**
Purchase Order:	**1103811**	Workorder ID:	**TMM033|112IL06247**

Dear Ms. Thomson:

Enclosed are the analytical results for samples received by the laboratory between Wednesday, May 13, 2015 and Tuesday, May 19, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Samantha Brenner , Mr. Tony Apanavage

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2070699 TMM033|112IL06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2070699001	TB-051215	Water	5/12/2015 00:00	5/13/2015 19:40	Collected by Client
2070699002	MRC-MW-07A-051215	Water	5/12/2015 09:20	5/13/2015 19:40	Collected by Client
2070699003	MRC-MW-59A-051215	Water	5/12/2015 11:10	5/13/2015 19:40	Collected by Client
2070699004	MRC-MW-57A-051215	Water	5/12/2015 13:35	5/13/2015 19:40	Collected by Client
2070699005	MRC-MW-25A-051315	Water	5/13/2015 10:05	5/13/2015 19:40	Collected by Client
2070699006	MRC-MW-DUP06-051315	Water	5/13/2015 00:00	5/13/2015 19:40	Collected by Client
2070699007	MRC-MW-87A-051315	Water	5/13/2015 11:20	5/13/2015 19:40	Collected by Client
2070699008	MRC-MW-74B-051315	Water	5/13/2015 13:05	5/13/2015 19:40	Collected by Client
2070699009	MRC-MW-42A-051315	Water	5/13/2015 09:25	5/13/2015 19:40	Collected by Client
2070699010	MRC-MW-48A-051315	Water	5/13/2015 10:40	5/13/2015 19:40	Collected by Client
2070699011	MRC-MW-24A-051315	Water	5/13/2015 12:10	5/13/2015 19:40	Collected by Client
2070699012	MRC-MW-41A-051315	Water	5/13/2015 13:55	5/13/2015 19:40	Collected by Client

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
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SAMPLE SUMMARY

Workorder: 2070699 TMM033|112IL06247

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2070699 TMM033|112IL06247

Workorder Comments

Testing on samples 003 and 004 were cancelled per Josh Mullis, samples were previously collected and analyzed. DJM 5/14/15

See attached subcontracted perchlorate results from ALS-Ft. Collins. VLF 6/2/15

14348/#1 1513562

1513562

Analytical Laboratory Services, Inc.

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #:	1 of 1
ALSI Quote #:	

Client Name: ALS Global

Address: 34 Dogwood Lane
Middletown, PA 17057

Contact: Debra Musser

Phone#: 7179445541x3153

Project Name/#:

Bill To:

TAT: [ ] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALSI approval and surcharges.

Date Required: _____ Approved By: _____

Email? [X] -Y Debra.Musser@alsglobal.com

Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED: Perchlorate (Method 6850)									
								Enter Number of Containers Per Sample or Field Results Below.									
2070699 008	5/13/15	1305	C	W				X									
2070699 012	5/13/15	1355	C	W				X									

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Cooler #: _____

Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?		
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all nonconformance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other _____

Tracking #: _____

Sample/COC Comments

Subcontract: ALS Salt Lake City

Level IV Package Needed

TetraTech EDD also required

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments: Due 5/19/15

Logged By (initials/date/time) _____

Reviewed By (initials/date/time) _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	5/14/15	1500	2 ALS	5/15/15	09:15
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE

Special Processing: USACE [ ] Navy [ ] DOD [ ]

State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type: ADR/SEDD

* G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Copies: WHITE - ORIGINAL CANARY - CUSTOMER MAILING PINK - FILE GOLDENROD - CUSTOMER COPY

Rev 8/04

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1513562

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1567 (149278)

General Set Information: There were five field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 448332) was less than 1/2 the CRDL. The recovery for the LCS (448333) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1513562001 (Client ID: 2070699 008). The percent recoveries and the relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 26MAYP-02/03/11/13/16.

Thomas Bosch — June 1, 2015
Thomas Bosch — Date

ANALYTICAL REPORT

Report Date: June 01, 2015

Debra Musser
ALS Environmental- Middletown
34 Dogwood Lane
Middletown, PA 17057

Phone: 717 944-5541 x 3162

E-mail: Debra.musser@alsglobal.com

Workorder: **34-1513562**
Project ID: 2070699
Purchase Order: 2070699

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
2070699 008	1513562001	05/13/15	05/15/15	
2070699 012	1513562002	05/13/15	05/15/15	

ANALYTICAL REPORT

Workorder: 34-1513562
Client: ALS Environmental
Project Manage Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: 2070699	Split:	Workorder ID: 1513562	Level: ENV_LVL4
Client: ALS Environmental		Account: 8001	Type: 250Poly
Comments:			Preservatives

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850
1	05/13/2015 13:05	2070699 008	1513562001		Water	A	1	A
2	05/13/2015 13:55	2070699 012	1513562002		Water	A	1	A
3								
4								
5								
6								
7								
8								
9								
10								

COOL

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/15/2015 09:50	ALS Sample Receiving	Sample Login
Julie Warath 5/15/15 1345		3C	storage
R.33.1 5.26.15/08:25		T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

L135562

Client Name: ALS middletown

Project/Task/Site: PO 2070697

Date/Time of Receipt: 05/15/15 09:50

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Container Custody Seals:	Present/Absent/NA	project specific guidelines?	Yes/No/NA
	Intact/Broken/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA
Residual Chlorine Check Performed:	8270	Yes/No/NA	8310	Yes/No/NA	8330	Yes/No/NA
	8081	Yes/No/NA	8151	Yes/No/NA		

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALSL Cooler No.	Temp.
1	C15 6076	2 °C	4	C15	°C	7	C15	°C
2	C15	°C	5	C15	°C	8	C15	°C
3	C15	°C	6	C15	°C	9	C15	°C

Taken By: _____ (Signature) Thomas Garrison (Printed Name) 05/15/15 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

E-mailed to Client? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

FIELD DUPLICATE PRECISION

ANALYTE	MRC-MW-87A-051315	QUAL	MRC-MW-DUP06-051315	QUAL	RPD	DIFFERENCE	RL
Chloromethane	0.49	J	1	U	~~68.46~~	0.51	1

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 315051400.D BFB Injection Date: 5/14/2015

Instrument ID: ms03.i BFB Injection Time: 09:42

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.4
75	30.0 - 60.0% of mass 95	47.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.5(0.5) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.2) 1
176	95.0 - 101.0% of mass 174	88.3 (96.7) 1
177	5.0 - 9.0% of mass 176	5.9 (6.7) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	315051403.D	5/14/2015	10:52
1234	1234	315051404.D	5/14/2015	11:14
1235	1235	315051405.D	5/14/2015	11:36
1236	1236	315051406.D	5/14/2015	11:58
1237	1237	315051407.D	5/14/2015	12:20
1238	1238	315051408.D	5/14/2015	12:42
1239	1239	315051409.D	5/14/2015	13:04
2177870(LCS)	2177870	315051413.D	5/14/2015	14:31

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3645	18882	69233	190333	414365	L
Acrolein	0.02564	0.02735	0.02734	0.02954	0.03083	A
Acrylonitrile	0.05340	0.05544	0.05621	0.05960	0.06149	A
Acetonitrile	0.02110	0.01947	0.01689	0.01738	0.01793	A
tert-Amyl Ethylether	12773	74622	326547	965729	2212322	L
tert-Amyl methyl ether	15291	93569	412141	1177326	2631483	L
tert-Amyl Alcohol	1731	10993	47672	150815	346185	Q
Benzene	0.76184	0.79039	0.77045	0.76998	0.79886	A
Benzyl Chloride	398	4029	25868	115250	319198	Q
Bromobenzene	0.61313	0.62139	0.63881	0.66498	0.68157	A
Bromochloromethane	0.09153	0.10275	0.10066	0.10047	0.10372	A
Bromodichloromethane	6212	38217	183949	544640	1251758	L
Bromoform *	1633	11986	65084	227734	569801	Q
Bromomethane	9797	35319	121725	303696	661317	L
2-Butanone	0.02188	0.02073	0.02254	0.02390	0.02425	A
tert.- Butyl Alcohol	0.01396	0.01443	0.01274	0.01412	0.01546	A
tert-Butylbenzene	0.40310	0.43700	0.49748	0.51264	0.53893	A
n-Butylbenzene	3745	25771	150608	433957	1014121	L
sec-Butylbenzene	21057	151642	784728	2179564	4811365	L
Carbon Disulfide	14541	77503	357638	1060387	2543667	Q
Carbon Tetrachloride	5270	33342	166478	481308	1145041	L
Chloroacetonitrile	368	4020	18821	57347	127671	L
Chlorobenzene *	1.54161	1.54722	1.52836	1.53129	1.60381	A
1-Chlorobutane	0.17164	0.16281	0.16243	0.15609	0.16362	A
Chlorodibromomethane	3701	25731	136746	424770	984536	Q
Chloroethane	0.18207	0.19051	0.18344	0.16664	0.16174	A
2-Chloroethylvinyl ether	611	5690	32062	144865	381297	Q
Chloroform **	24606	87202	326545	860343	1880332	L
1-Chlorohexane	8507	51493	253696	722169	1684157	L
Chloromethane *	0.20194	0.19734	0.18999	0.17860	0.18833	A
Chloroprene	0.19613	0.22764	0.23294	0.23179	0.24830	A
3-Chloro-1-propene	0.16378	0.16533	0.17166	0.17033	0.17347	A
o-Chlorotoluene	1.49598	1.70792	1.81564	1.88697	1.94044	A
p-Chlorotoluene	1.39042	1.59241	1.69153	1.76492	1.80063	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.25075	0.27800	0.30081	0.29970	0.32467	A
1,2-Dibromo-3-Chloropropane	385	3034	15296	54465	132631	Q
1,2-Dibromoethane	5575	32597	150192	423436	930198	L
Dibromomethane	0.09985	0.10226	0.10619	0.10600	0.11147	A
trans-1,4-Dichloro-2-butene	784	5040	25757	88665	210562	Q
1,2-Dichlorobenzene	0.90561	0.97571	0.98840	1.03109	1.05534	A
1,3-Dichlorobenzene	1.05126	1.08789	1.09471	1.13564	1.16977	A
1,4-Dichlorobenzene	1.13796	1.13643	1.11935	1.15355	1.18665	A
Dichlorodifluoromethane	0.25489	0.27952	0.25910	0.24307	0.24970	A
1,1-Dichloroethane *	0.30670	0.31352	0.31982	0.31204	0.33012	A
1,2-Dichloroethene, Total	0.22496	0.23166	0.22844	0.22514	0.23635	A
1,2-Dichloroethane	0.22908	0.23384	0.22768	0.22277	0.22222	A
1,1-Dichloroethene **	0.23646	0.25009	0.23528	0.22471	0.24125	A
cis-1,2-Dichloroethene	0.22617	0.23284	0.22856	0.22506	0.23738	A
trans-1,2-Dichloroethene	0.22375	0.23047	0.22832	0.22522	0.23532	A
Dichlorofluoromethane	0.46454	0.42602	0.40182	0.36431	0.35661	A
1,1-Dichloro-2-Propanone	266	2264	11453	41104	96731	Q
2,2-Dichloropropane	0.20384	0.21077	0.22160	0.22566	0.24050	A
1,3-Dichloropropane	0.72192	0.76367	0.75853	0.77252	0.78876	A
1,2-Dichloropropane **	0.18984	0.17872	0.18410	0.18580	0.19327	A
1,1-Dichloropropene	0.22908	0.25939	0.26386	0.25801	0.27510	A
cis-1,3-Dichloropropene	6438	44404	230574	700770	1637638	Q
trans-1,3-Dichloropropene	4993	38666	203324	621214	1432395	Q
1,3-Dichloropropene, Total	11431	83070	433898	1321984	3070033	L
Diisobutylene	51783	113435	422759	1122643	2590079	L
Diisopropyl ether	0.41805	0.45278	0.48355	0.48790	0.52575	A
1,4-Dioxane	1818	11355	50492	143123	312920	L
Ethyl Acetate	0.13117	0.12113	0.13167	0.13852	0.14280	A
Ethyl ether	0.13501	0.14910	0.11764	0.11433	0.12530	A
Ethyl Methacrylate	6140	41782	204578	629726	1410865	Q
Ethyl tert-butyl ether	0.42585	0.45730	0.48034	0.50338	0.53871	A
Ethylbenzene **	0.71457	0.78204	0.81960	0.83836	0.88544	A
Freon 113	0.16542	0.16877	0.17109	0.16304	0.17347	A
Heptane	3382	20697	120263	306543	761774	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	2369	11892	68493	191107	440630	Q
Hexachloroethane	1616	10839	63591	213573	549211	Q
Hexane	0.26749	0.27860	0.32395	0.30572	0.33465	A
2-Hexanone	14676	93581	461292	1358303	2931600	L
Iodomethane	1350	9861	67898	205634	472384	Q
Isobutyl alcohol	2929	11125	57350	183575	407548	Q
Isopropyl Alcohol	0.01012	0.00787	0.00819	0.00866	0.00920	A
Isopropylbenzene	1.89417	2.26300	2.48812	2.59506	2.70319	A
p-Isopropyltoluene	4434	33110	177645	518799	1175390	L
Methyl acetate	0.02751	0.03057	0.02879	0.02980	0.03191	A
Methyl acrylate	5331	29375	128722	371931	853542	L
Methacrylonitrile	2806	16067	66755	193112	425978	L
Methyl cyclohexane	0.69369	0.74546	0.85028	0.87509	0.96665	A
Methyl methacrylate	4409	23243	107116	321640	726532	L
Methyl t-Butyl Ether	0.46602	0.44697	0.45706	0.46668	0.49048	A
4-Methyl-2-Pentanone(MIBK)	23112	146483	690905	2015657	4339252	L
Methylene Chloride	21868	59839	193670	483204	1080199	Q
Naphthalene	2242	29060	186395	760357	1844284	Q
Nitrobenzene	70.00000	2325	15240	77907	291154	Q
2-Nitropropane	3300	19876	115502	398010	922192	Q
Octane	2289	12648	87626	247160	570715	L
Pentachloroethane	645	4388	22149	61549	138320	L
Pentane	0.14174	0.13206	0.13520	0.12112	0.11977	A
n-Propanol	0.01199	0.01023	0.00961	0.00934	0.00943	A
Propionitrile	0.02051	0.02421	0.02300	0.02426	0.02492	A
n-Propylbenzene	6800	45499	233250	661747	1491141	L
Styrene	14661	105027	513755	1490129	3338505	L
1,1,1,2-Tetrachloroethane	5027	33386	159187	462204	1038673	L
1,1,2,2-Tetrachloroethane *	0.46440	0.51384	0.52231	0.55596	0.56294	A
Tetrachloroethene	0.56687	0.56909	0.54267	0.54287	0.57246	A
Tetrahydrofuran	0.04120	0.04226	0.04110	0.04436	0.04602	A
Toluene **	1.20153	1.26325	1.30673	1.33623	1.39657	A
Total Xylenes	0.78815	0.87556	0.95264	0.98620	1.04162	A
1,2,3-Trichlorobenzene	1735	16474	83143	273212	624153	L

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	2962	25224	131764	410630	960017	L
1,1,1-Trichloroethane	0.23095	0.24671	0.26944	0.26003	0.28252	A
1,1,2-Trichloroethane	0.38051	0.35869	0.36844	0.36947	0.38451	A
Trichloroethene	0.20763	0.20252	0.19883	0.20524	0.21543	A
Trichlorofluoromethane	0.35579	0.41219	0.39182	0.35758	0.35889	A
1,2,3-Trichloropropane	0.19182	0.17917	0.17938	0.18802	0.18678	A
1,2,4-Trimethylbenzene	16774	124847	621316	1759331	3842840	L
1,3,5-Trimethylbenzene	17763	126584	634122	1774661	3909923	L
Vinyl Acetate	607	6004	28448	95481	229728	Q
Vinyl Chloride **	0.25270	0.27931	0.26717	0.24977	0.25259	A
o-Xylene	12184	67368	324353	916999	2060128	L
mp-Xylene	0.79919	0.91357	0.97775	1.00588	1.05877	A
4-Bromofluorobenzene	7218	41921	197765	546930	1238831	L
Dibromofluoromethane	0.14487	0.16405	0.17407	0.17669	0.18637	A
1,2-Dichloroethane-d4	0.17441	0.18564	0.18090	0.18022	0.18452	A
Toluene-d8	1.63574	1.80848	1.88881	1.91234	2.02297	A

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VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	832273	2135		L	0.000000	68.526894		0.99939
Acrolein	0.03008	0.02110		A		0.027410		12.13419
Acrylonitrile	0.05878	0.04770		A		0.056090		8.19667
Acetonitrile	0.01709	0.02298		A		0.018980		12.22888
tert-Amyl Ethylether	4815720	5256		L	0.000000	2.423480		0.99874
tert-Amyl methyl ether	5674688	6631		L	0.000000	2.049050		0.99940
tert-Amyl Alcohol	719667	755		Q	0.000000	0.012100	0.000010	0.99944
Benzene	0.79415	0.71082		A		0.770930		3.88947
Benzyl Chloride	770897	73.00000		Q	0.000000	0.123380	0.010840	0.99849
Bromobenzene	0.69090	0.51353		A		0.632050		9.48509
Bromochloromethane	0.10871	0.09087		A		0.099820		6.50519
Bromodichloromethane	2746119	2698		L	0.000000	4.258560		0.99843
Bromoform *	1281742	523		Q	0.000000	0.253540	0.010710	0.99916
Bromomethane	1345361	4832		L	0.000000	8.498350		0.99945
2-Butanone	0.02364	0.01779		A		0.022100		10.27919
tert.- Butyl Alcohol	0.01504	0.01183		A		0.013940		9.10400
tert-Butylbenzene	0.54964	0.40799		A		0.478110		12.84093
n-Butylbenzene	2179112	2094		L	0.000000	1.839270		0.99852
sec-Butylbenzene	9788039	11241		L	0.000000	0.402810		0.99979
Carbon Disulfide	5617948	6837		Q	0.000000	0.416880	0.010740	0.99958
Carbon Tetrachloride	2508398	2320		L	0.000000	4.667720		0.99791
Chloroacetonitrile	252121	201		L	0.000000	83.069862		0.99925
Chlorobenzene *	1.61662	1.44241		A		1.544470		3.69986
1-Chlorobutane	0.16385	0.17237		A		0.164690		3.43285
Chlorodibromomethane	2160848	1297		Q	0.000000	0.430370	0.012440	0.99974
Chloroethane	0.14200	0.20908		A		0.176500		12.33135
2-Chloroethylvinyl ether	834309	302		Q	0.000000	0.058300	0.002170	0.99748
Chloroform **	3990408	17372		L	0.000000	2.897240		0.99987
1-Chlorohexane	3567236	4536		L	0.000000	1.196610		0.99856
Chloromethane *	0.18878	0.22323		A		0.195460		7.31413
Chloroprene	0.25687	0.20278		A		0.228070		9.70049
3-Chloro-1-propene	0.16420	0.13452		A		0.163330		8.12301
o-Chlorotoluene	1.92633	1.56343		A		1.762390		10.10926
p-Chlorotoluene	1.77229	1.25616		A		1.609770		13.10560
Cyclohexane	0.33449	0.27531		A		0.294820		9.91755
1,2-Dibromo-3-Chloropropane	289761			Q	0.000000	0.061330	0.001820	0.99906

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	1938095	2221		L	0.000000	2.187030		0.99971
Dibromomethane	0.11043	0.09335		A		0.104220		6.06142
trans-1,4-Dichloro-2-butene	444482	151		Q	0.000000	0.101630	0.001660	0.99912
1,2-Dichlorobenzene	1.06681	0.89444		A		0.988200		6.94931
1,3-Dichlorobenzene	1.17834	0.97480		A		1.098910		6.48705
1,4-Dichlorobenzene	1.21523	1.10904		A		1.151170		3.27878
Dichlorodifluoromethane	0.24727	0.26945		A		0.257570		5.03878
1,1-Dichloroethane *	0.33379	0.28283		A		0.314120		5.38072
1,2-Dichloroethene, Total	0.24096	0.22242		A		0.229990		2.92789
1,2-Dichloroethane	0.21891	0.21341		A		0.223990		3.04346
1,1-Dichloroethene **	0.25057	0.22571		A		0.237720		4.38379
cis-1,2-Dichloroethene	0.24112	0.24544		A		0.233800		3.33514
trans-1,2-Dichloroethene	0.24080	0.19940		A		0.226180		5.83269
Dichlorofluoromethane	0.33477	0.38956		A		0.391090		11.34380
1,1-Dichloro-2-Propanone	200765			Q	-0.004690	0.009320	0.000010	0.99910
2,2-Dichloropropane	0.24627	0.19435		A		0.220430		8.58392
1,3-Dichloropropane	0.78366	0.62698		A		0.745150		7.58382
1,2-Dichloropropane **	0.19657	0.16714		A		0.185060		5.33784
1,1-Dichloropropene	0.28109	0.22463		A		0.255880		8.41311
cis-1,3-Dichloropropene	3573920	2663		Q	0.000000	0.717410	0.019750	0.99971
trans-1,3-Dichloropropene	3057632	2184		Q	0.000000	0.643050	0.012520	0.99967
1,3-Dichloropropene, Total	6631552	4847		L	0.000000	1.293600		0.99773
Diisobutylene	5495046	45414		L	0.000000	2.109840		0.99928
Diisopropyl ether	0.52850	0.36929		A		0.466550		12.40276
1,4-Dioxane	629652	786		L	0.000000	453		0.99945
Ethyl Acetate	0.14280	0.10731		A		0.130770		9.84097
Ethyl ether	0.13124	0.10524		A		0.125410		11.63488
Ethyl Methacrylate	2948531	2569		Q	0.000000	0.653510	0.007040	0.99972
Ethyl tert-butyl ether	0.54780	0.36780		A		0.474450		13.44419
Ethylbenzene **	0.90567	0.73274		A		0.811200		8.94452
Freon 113	0.17948	0.17264		A		0.170560		3.20025
Heptane	1619383	1762		Q	-0.005110	0.131410	0.001530	0.99913
Hexachlorobutadiene	926129	1676		Q	-0.007130	0.225200	0.001530	0.99974
Hexachloroethane	1285737	735		Q	0.000000	0.232680	0.013970	0.99934
Hexane	0.33938	0.25071		A		0.300070		11.62573
2-Hexanone	5735228	5651		L	0.000000	3.636180		0.99918

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1031133	985		Q	0.000000	0.079700	0.001490	0.99973
Isobutyl alcohol	880621	1141		Q	0.000000	0.007040	0.000000	0.99975
Isopropyl Alcohol	0.00887	0.01036		A		0.009040		10.30113
Isopropylbenzene	2.62023	2.01212		A		2.367980		13.40043
p-Isopropyltoluene	2518453	1896		L	0.000000	1.588020		0.99905
Methyl acetate	0.03103	0.03248		A		0.030300		5.76385
Methyl acrylate	1770587	2071		L	0.000000	6.515500		0.99949
Methacrylonitrile	875445	970		L	0.000000	13.119880		0.99976
Methyl cyclohexane	1.01234	0.71229		A		0.836540		14.93427
Methyl methacrylate	1490680	1619		L	0.000000	7.714070		0.99950
Methyl t-Butyl Ether	0.49727	0.42312		A		0.463940		5.44471
4-Methyl-2-Pentanone(MIBK)	8332224	9246		L	0.000000	2.490420		0.99855
Methylene Chloride	2310548	15655		Q	0.000000	0.192120	0.001260	0.99979
Naphthalene	3880317	701		Q	0.000000	0.872360	0.016860	0.99834
Nitrobenzene	899982			Q	-0.014560	0.007170	0.000240	0.99914
2-Nitropropane	1878315	1212		Q	0.000000	0.084770	0.000140	0.99902
Octane	1205408	1052		L	0.000000	3.537270		0.99871
Pentachloroethane	294903	215		L	0.000000	13.535010		0.99941
Pentane	0.11131	0.13691		A		0.128300		8.59391
n-Propanol	0.00919	0.00864		A		0.009780		11.13236
Propionitrile	0.02406	0.02022		A		0.023030		8.27725
n-Propylbenzene	3151005	3478		L	0.000000	1.264430		0.99949
Styrene	6912822	6733		L	0.000000	0.573440		0.99969
1,1,1,2-Tetrachloroethane	2199347	2286		L	0.000000	1.937380		0.99909
1,1,2,2-Tetrachloroethane *	0.54616	0.39349		A		0.508450		11.91623
Tetrachloroethene	0.59912	0.63371		A		0.575260		5.59395
Tetrahydrofuran	0.04424	0.03361		A		0.041830		9.68766
Toluene **	1.42055	1.16378		A		1.298380		7.36076
Total Xylenes	1.05536	0.75752		A		0.922430		12.84838
1,2,3-Trichlorobenzene	1285783	704		L	0.000000	3.084920		0.99905
1,2,4-Trichlorobenzene	2053646	1279		L	0.000000	1.950550		0.99836
1,1,1-Trichloroethane	0.28972	0.20043		A		0.254260		12.24638
1,1,2-Trichloroethane	0.38821	0.26778		A		0.359660		11.62243
Trichloroethene	0.22284	0.27797		A		0.218640		12.52648
Trichlorofluoromethane	0.34830	0.41862		A		0.377600		7.77085
1,2,3-Trichloropropane	0.18098	0.13526		A		0.177350		10.80763

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SPCC Compounds (*) with required minimum RRF.

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Calibration Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

LAB FILE ID: RRF001 = 315051404.D RRF005 = 315051405.D RRF020 = 315051406.D RRF050 = 315051407.D

RRF100 = 315051408.D RRF200 = 315051409.D RRF00.5 = 315051403.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	7920871	8401		L	0.000000	0.499150		0.99989
1,3,5-Trimethylbenzene	8069300	8829		L	0.000000	0.490300		0.99987
Vinyl Acetate	512550	109		Q	0.000000	0.036890	0.001150	0.99942
Vinyl Chloride **	0.24305	0.28472		A		0.261330		6.09742
o-Xylene	4343040	5363		L	0.000000	0.979880		0.99926
mp-Xylene	1.06816	0.80184		A		0.946450		11.86152
4-Bromofluorobenzene	2575228	3455		L	0.000000	1.541110		0.99969
Dibromofluoromethane	0.18672	0.12421		A		0.165280		14.01022
1,2-Dichloroethane-d4	0.18059	0.17710		A		0.180480		2.16351
Toluene-d8	2.01020	1.50913		A		1.826810		10.50663

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2177870

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		87.7	87.7	(39-160)
Benzene	20.0		19.3	96.7	(79-120)
Bromochloromethane	20.0		19.2	95.8	(78-123)
Bromodichloromethane	20.0		16.6	83	(79-125)
Bromoform	20.0		16.3	81.4	(66-130)
Bromomethane	20.0		23.2	116	(53-141)
2-Butanone	100		95.8	95.8	(56-143)
Carbon Disulfide	20.0		13.0	65	(64-133)
Carbon Tetrachloride	20.0		16.8	84.1	(72-136)
Chlorobenzene	20.0		19.9	99.5	(82-118)
Chlorodibromomethane	20.0		17.6	87.8	(74-126)
Chloroethane	20.0		14.3	71.5	(60-138)
Chloroform	20.0		19.7	98.4	(79-124)
Chloromethane	20.0		18.1	90.4	(50-139)
Cyclohexane	20.0		19.4	97	(71-130)
1,2-Dibromo-3-Chloropro	20.0		16.4	81.9	(62-128)
1,2-Dibromoethane	20.0		18.1	90.4	(77-121)
1,2-Dichlorobenzene	20.0		21.1	105	(80-119)
1,3-Dichlorobenzene	20.0		21.3	106	(80-119)
1,4-Dichlorobenzene	20.0		20.6	103	(79-118)
Dichlorodifluoromethane	20.0		14.9	74.4	(32-152)
1,1-Dichloroethane	20.0		19.1	95.6	(77-125)
1,2-Dichloroethane	20.0		19.0	94.9	(73-128)
1,1-Dichloroethene	20.0		17.8	89.2	(71-131)
cis-1,2-Dichloroethene	20.0		18.9	94.6	(78-123)
trans-1,2-Dichloroethen	20.0		19.2	96	(75-124)
1,2-Dichloropropane	20.0		20.0	99.9	(78-122)
cis-1,3-Dichloropropene	20.0		18.0	90.1	(75-124)
trans-1,3-Dichloroprope	20.0		19.0	95.1	(73-127)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2177870

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		403	80.7	(59-139)
Ethylbenzene	20.0		20.7	103	(79-121)
Freon 113	20.0		18.7	93.6	(70-136)
2-Hexanone	100		87.3	87.3	(57-139)
Isopropylbenzene	20.0		23.1	115	(72-131)
Methyl acetate	20.0		19.1	95.5	(56-136)
Methyl cyclohexane	20.0		20.3	102	(72-132)
Methyl t-Butyl Ether	20.0		19.0	94.8	(71-124)
4-Methyl-2-Pentanone(MI	100		90.5	90.5	(67-130)
Methylene Chloride	20.0		21.3	107	(74-124)
Styrene	20.0		19.3	96.5	(78-123)
1,1,2,2-Tetrachloroetha	20.0		21.3	107	(71-121)
Tetrachloroethene	20.0		18.9	94.4	(74-129)
Toluene	20.0		20.4	102	(80-121)
1,2,3-Trichlorobenzene	20.0		16.8	84.1	(69-129)
1,2,4-Trichlorobenzene	20.0		16.8	84.1	(69-130)
1,1,1-Trichloroethane	20.0		20.2	101	(74-131)
1,1,2-Trichloroethane	20.0		20.2	101	(80-119)
Trichloroethene	20.0		18.5	92.6	(79-123)
Trichlorofluoromethane	20.0		17.9	89.4	(65-141)
Vinyl Chloride	20.0		18.1	90.5	(58-137)
o-Xylene	20.0		18.2	91.1	(78-122)
mp-Xylene	40.0		42.5	106	(80-121)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 315051500.D BFB Injection Date: 5/15/2015

Instrument ID: ms03.i BFB Injection Time: 11:17

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.2
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.6(0.6) 1
174	50.0 - 100.0% of mass 95	91.3
175	5.0 - 9.0% of mass 174	6.5 (7.1) 1
176	95.0 - 101.0% of mass 174	89.3 (97.8) 1
177	5.0 - 9.0% of mass 176	5.6 (6.3) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	315051501.D	5/15/2015	11:47
2178404(MB)	2178404	315051503.D	5/15/2015	12:46
2178405(LCS)	2178405	315051504.D	5/15/2015	13:08
TB-051215	2070699001	315051508.D	5/15/2015	14:36
MRC-MW-25A-051315	2070699005	315051519.D	5/15/2015	18:37
MRC-MW-74B-051315	2070699008	315051522.D	5/15/2015	19:43
MRC-MW-48A-051315	2070699010	315051523.D	5/15/2015	20:04

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		216		-13.7	100.0	L
Acrolein	0.0274	0.0256			-6.6	100.0	A
Acrylonitrile	0.0561	0.0529			-5.8	100.0	A
Acetonitrile	0.0190	0.0186			-2.2	100.0	A
tert-Amyl Ethylether	50.0000		47.7755		-4.4	100.0	L
tert-Amyl methyl ether	50.0000		46.9220		-6.2	100.0	L
tert-Amyl Alcohol	250		178		-28.8	100.0	L
Benzene	0.7709	0.7784			1.0	100.0	A
Benzyl Chloride	50.0000		47.1823		-5.6	100.0	Q
Bromobenzene	0.6320	0.6501			2.9	100.0	A
Bromochloromethane	0.0998	0.1018			2.0	100.0	A
Bromodichloromethane	50.0000		45.3569		-9.3	100.0	L
Bromoform	50.0000		43.8300	0.100	-12.3	100.0	Q
Bromomethane	50.0000		46.5487		-6.9	100.0	L
2-Butanone	0.0221	0.0202			-8.9	100.0	A
tert.- Butyl Alcohol	0.0139	0.0104			-25.4	100.0	A
tert-Butylbenzene	0.4781	0.4852			1.5	100.0	A
n-Butylbenzene	50.0000		41.1425		-17.7	100.0	L
sec-Butylbenzene	50.0000		45.5705		-8.9	100.0	L
Carbon Disulfide	50.0000		43.4019		-13.2	100.0	L
Carbon Tetrachloride	50.0000		45.3119		-9.4	100.0	L
Chloroacetonitrile	250		201		-19.4	100.0	L
Chlorobenzene	1.5445	1.4958		0.300	-3.2	100.0	A
1-Chlorobutane	0.1647	0.1568			-4.8	100.0	A
Chlorodibromomethane	50.0000		41.7828		-16.4	100.0	L
Chloroethane	0.1765	0.1542			-12.6	100.0	A
2-Chloroethylvinyl ether	50.0000		76.2814		52.6	100.0	Q
Chloroform	50.0000		48.3109		-3.4	20.0	L
1-Chlorohexane	50.0000		42.3941		-15.2	100.0	L
Chloromethane	0.1955	0.1756		0.100	-10.2	100.0	A
Chloroprene	0.2281	0.2355			3.3	100.0	A
3-Chloro-1-propene	0.1633	0.1716			5.1	100.0	A
o-Chlorotoluene	1.7624	1.8116			2.8	100.0	A
p-Chlorotoluene	1.6098	1.7083			6.1	100.0	A
Cyclohexane	0.2948	0.2842			-3.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		41.6357		-16.7	100.0	Q
1,2-Dibromoethane	50.0000		46.1451		-7.7	100.0	L
Dibromomethane	0.1042	0.1034			-0.8	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		45.4274		-9.1	100.0	L
1,2-Dichlorobenzene	0.9882	0.9840			-0.4	100.0	A
1,3-Dichlorobenzene	1.0989	1.0809			-1.6	100.0	A
1,4-Dichlorobenzene	1.1512	1.1069			-3.8	100.0	A
Dichlorodifluoromethane	0.2576	0.2289			-11.1	100.0	A
1,1-Dichloroethane	0.3141	0.3178		0.100	1.2	100.0	A
1,2-Dichloroethene, Total	0.2300	0.2291			-0.4	100.0	A
1,2-Dichloroethane	0.2240	0.2185			-2.4	100.0	A
1,1-Dichloroethene	0.2377	0.2311			-2.8	20.0	A
cis-1,2-Dichloroethene	0.2338	0.2282			-2.4	100.0	A
trans-1,2-Dichloroethene	0.2262	0.2300			1.7	100.0	A
Dichlorofluoromethane	0.3911	0.3473			-11.2	100.0	A
1,1-Dichloro-2-Propanone	250		200		-20.0	100.0	Q
2,2-Dichloropropane	0.2204	0.2232			1.2	100.0	A
1,3-Dichloropropane	0.7452	0.7474			0.3	100.0	A
1,2-Dichloropropane	0.1851	0.1877			1.4	20.0	A
1,1-Dichloropropene	0.2559	0.2575			0.6	100.0	A
cis-1,3-Dichloropropene	50.0000		44.2645		-11.5	100.0	L
trans-1,3-Dichloropropene	50.0000		45.7992		-8.4	100.0	L
1,3-Dichloropropene, Total	100		90.0637		-9.9	100.0	L
Diisobutylene	50.0000		42.6611		-14.7	100.0	L
Diisopropyl ether	0.4665	0.5092			9.1	100.0	A
1,4-Dioxane	1250		571		-54.3	100.0	L
Ethyl Acetate	0.1308	0.1255			-4.1	100.0	A
Ethyl ether	0.1254	0.1206			-3.8	100.0	A
Ethyl Methacrylate	50.0000		44.7337		-10.5	100.0	L
Ethyl tert-butyl ether	0.4744	0.5112			7.7	100.0	A
Ethylbenzene	0.8112	0.7997			-1.4	20.0	A
Freon 113	0.1706	0.1592			-6.7	100.0	A
Heptane	50.0000		39.9487		-20.1	100.0	Q
Hexachlorobutadiene	50.0000		42.2464		-15.5	100.0	Q
Hexachloroethane	50.0000		46.2337		-7.5	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3001	0.2993			-0.3	100.0	A
2-Hexanone	250		223		-10.8	100.0	L
Iodomethane	50.0000		41.4150		-17.2	100.0	Q
Isobutyl alcohol	500		324		-35.2	100.0	L
Isopropyl Alcohol	0.0090	0.0058			-36.1	100.0	A
Isopropylbenzene	2.3680	2.4749			4.5	100.0	A
p-Isopropyltoluene	50.0000		42.7350		-14.5	100.0	L
Methyl acetate	0.0303	0.0273			-9.8	100.0	A
Methyl acrylate	50.0000		44.0285		-11.9	100.0	L
Methacrylonitrile	50.0000		45.2531		-9.5	100.0	L
Methyl cyclohexane	0.8365	0.7992			-4.5	100.0	A
Methyl methacrylate	50.0000		46.0941		-7.8	100.0	L
Methyl t-Butyl Ether	0.4639	0.4661			0.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		232		-7.3	100.0	L
Methylene Chloride	50.0000		52.5174		5.0	100.0	Q
Naphthalene	50.0000		41.2501		-17.5	100.0	L
Nitrobenzene	500		319		-36.3	100.0	Q
2-Nitropropane	250		208		-16.9	100.0	L
Octane	50.0000		34.9468		-30.1	100.0	L
Pentachloroethane	50.0000		45.8760		-8.2	100.0	L
Pentane	0.1283	0.1098			-14.4	100.0	A
n-Propanol	0.0098	0.0091			-6.7	100.0	A
Propionitrile	0.0230	0.0207			-10.3	100.0	A
n-Propylbenzene	50.0000		44.9955		-10.0	100.0	L
Styrene	50.0000		47.4760		-5.0	100.0	L
1,1,1,2-Tetrachloroethane	50.0000		44.6131		-10.8	100.0	L
1,1,2,2-Tetrachloroethane	0.5084	0.5168		0.300	1.6	100.0	A
Tetrachloroethene	0.5753	0.4932			-14.3	100.0	A
Tetrahydrofuran	0.0418	0.0384			-8.2	100.0	A
Toluene	1.2984	1.3164			1.4	20.0	A
Total Xylenes	0.9224	0.9453			2.5	100.0	A
1,2,3-Trichlorobenzene	50.0000		45.6967		-8.6	100.0	L
1,2,4-Trichlorobenzene	50.0000		41.7318		-16.5	100.0	L
1,1,1-Trichloroethane	0.2543	0.2604			2.4	100.0	A
1,1,2-Trichloroethane	0.3597	0.3614			0.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms03.i Calibration Date/Time: 5/15/2015 11:47

Lab File ID: 315051501.D Init. Calib. Date(s): 5/14/2015 5/14/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 10:52 13:04

GC Column: RTXVRX ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2186	0.2002			-8.4	100.0	A
Trichlorofluoromethane	0.3776	0.3305			-12.5	100.0	A
1,2,3-Trichloropropane	0.1773	0.1714			-3.3	100.0	A
1,2,4-Trimethylbenzene	50.0000		46.8249		-6.4	100.0	L
1,3,5-Trimethylbenzene	50.0000		46.0915		-7.8	100.0	L
Vinyl Acetate	50.0000		50.5007		1.0	100.0	Q
Vinyl Chloride	0.2613	0.2290			-12.4	20.0	A
o-Xylene	50.0000		44.7407		-10.5	100.0	L
mp-Xylene	0.9464	0.9613			1.6	100.0	A
4-Bromofluorobenzene	50.0000		50.5263		1.1	100.0	L
Dibromofluoromethane	0.1653	0.1608			-2.7	100.0	A
1,2-Dichloroethane-d4	0.1805	0.1615			-10.5	100.0	A
Toluene-d8	1.8268	1.8124			-0.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2178404

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 315051503.D Lab Sample ID: 2178404

Date Analyzed: 5/15/2015 Time Analyzed: 12:46

GC Column: RTXVRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms03.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2178405(LCS)	2178405	315051504.D	13:08
TB-051215	2070699001	315051508.D	14:36
MRC-MW-25A-051315	2070699005	315051519.D	18:37
MRC-MW-74B-051315	2070699008	315051522.D	19:43
MRC-MW-48A-051315	2070699010	315051523.D	20:04

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2178404(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2178404

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 315051503.D

Level (low/med): Date Received: 5/15/15

% Moisture: not dec. 100.0 Date Analyzed: 5/15/15

GC Column: RTXVRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2178404(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2178404

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 315051503.D

Level (low/med): Date Received: 5/15/15

% Moisture: not dec. 100.0 Date Analyzed: 5/15/15

GC Column: RTXVRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		90.1	90.1	(40-151)
Benzene	20.0		20.0	99.9	(80-124)
Bromochloromethane	20.0		19.7	98.6	(73-117)
Bromodichloromethane	20.0		17.3	86.7	(79-126)
Bromoform	20.0		17.4	86.9	(70-123)
Bromomethane	20.0		15.4	76.9	(45-148)
2-Butanone	100		98.3	98.3	(50-152)
Carbon Disulfide	20.0		11.8	59	(57-131)
Carbon Tetrachloride	20.0		18.1	90.4	(62-132)
Chlorobenzene	20.0		20.3	101	(85-117)
Chlorodibromomethane	20.0		15.6	78.1	(77-122)
Chloroethane	20.0		13.8	69.2	(51-142)
Chloroform	20.0		20.3	101	(78-122)
Chloromethane	20.0		15.9	79.5	(38-156)
Cyclohexane	20.0		20.1	101	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.2	86.2	(59-133)
1,2-Dibromoethane	20.0		18.3	91.7	(80-124)
1,2-Dichlorobenzene	20.0		21.6	108	(82-118)
1,3-Dichlorobenzene	20.0		22.0	110	(81-118)
1,4-Dichlorobenzene	20.0		21.3	106	(81-116)
Dichlorodifluoromethane	20.0		13.4	67.1	(17-166)
1,1-Dichloroethane	20.0		19.8	98.9	(78-124)
1,2-Dichloroethane	20.0		19.2	96	(70-133)
1,1-Dichloroethene	20.0		18.2	91.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.7	98.7	(78-125)
trans-1,2-Dichloroethen	20.0		20.0	100	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		16.5	82.7	(81-121)
trans-1,3-Dichloroprope	20.0		18.0	89.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2178405

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		385	76.9	(1-280)
Ethylbenzene	20.0		21.1	105	(80-124)
Freon 113	20.0		19.7	98.3	(50-130)
2-Hexanone	100		89.0	89	(65-154)
Isopropylbenzene	20.0		23.7	119	(73-129)
Methyl acetate	20.0		18.4	92.2	(70-130)
Methyl cyclohexane	20.0		20.4	102	(70-130)
Methyl t-Butyl Ether	20.0		19.2	95.9	(69-115)
4-Methyl-2-Pentanone(MI	100		93.6	93.6	(71-146)
Methylene Chloride	20.0		21.1	105	(76-121)
Styrene	20.0		20.0	99.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		22.0	110	(74-135)
Tetrachloroethene	20.0		18.8	94.2	(72-124)
Toluene	20.0		21.2	106	(80-125)
1,2,3-Trichlorobenzene	20.0		20.3	101	(61-126)
1,2,4-Trichlorobenzene	20.0		18.5	92.6	(67-123)
1,1,1-Trichloroethane	20.0		21.1	106	(66-130)
1,1,2-Trichloroethane	20.0		20.3	101	(82-126)
Trichloroethene	20.0		19.0	95.1	(77-124)
Trichlorofluoromethane	20.0		16.5	82.4	(38-123)
Vinyl Chloride	20.0		15.9	79.7	(27-138)
o-Xylene	20.0		18.4	91.8	(79-124)
mp-Xylene	40.0		43.3	108	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 15051950.D BFB Injection Date: 5/19/2015

Instrument ID: ms15.i BFB Injection Time: 17:56

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	48.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	92.7
175	5.0 - 9.0% of mass 174	6.6 (7.1) 1
176	95.0 - 101.0% of mass 174	88.4 (95.3) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15051953.D	5/19/2015	18:52
1234	1234	15051954.D	5/19/2015	19:10
1235	1235	15051955.D	5/19/2015	19:27
1236	1236	15051956.D	5/19/2015	19:44
1237	1237	15051957.D	5/19/2015	20:01
1238	1238	15051958.D	5/19/2015	20:18
1239	1239	15051959.D	5/19/2015	20:35
2180033(MB)	2180033	15051963.D	5/19/2015	21:44
2180034(LCS)	2180034	15051964.D	5/19/2015	22:01
MRC-MW-DUP06-051315	2070699006	15051968.D	5/19/2015	23:10
MRC-MW-87A-051315	2070699007	15051969.D	5/19/2015	23:27
MRC-MW-41A-051315	2070699012	15051970.D	5/19/2015	23:45
MRC-MW-48A-051315-DL25	2070699010	15051971.D	5/20/2015	00:02
MRC-MW-74B-051315-DL100	2070699008	15051974.D	5/20/2015	00:53

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3115	12365	49853	134143	276003	L
Acrolein	0.02972	0.02957	0.02954	0.03038	0.03047	A
Acrylonitrile	0.08488	0.07199	0.07861	0.08049	0.07933	A
Acetonitrile	4425	17844	69326	188478	300736	Q
tert-Amyl Ethylether	9358	51721	251711	711597	1608239	L
tert-Amyl methyl ether	0.51419	0.50109	0.59173	0.61758	0.65041	A
tert-Amyl Alcohol	1545	9368	37420	112845	250393	L
Benzene	1.27694	1.26732	1.28484	1.24368	1.22049	A
Benzyl Chloride	834	6192	33005	118018	312515	Q
Bromobenzene	0.84079	0.89661	0.98859	0.97450	0.97760	A
Bromochloromethane	0.22690	0.20281	0.19716	0.19395	0.18988	A
Bromodichloromethane	0.39608	0.38566	0.41380	0.43297	0.44872	A
Bromoform *	0.44206	0.36305	0.40163	0.44578	0.48867	A
Bromomethane	9332	38368	134592	299912	612357	L
2-Butanone	0.03548	0.03196	0.03110	0.03238	0.03596	A
tert.- Butyl Alcohol	0.01799	0.01738	0.01766	0.01849	0.01911	A
tert-Butylbenzene	4210	35724	204082	583061	1226871	L
n-Butylbenzene	4251	32375	204916	604515	1292790	L
sec-Butylbenzene	21334	179122	1024862	2860265	6050064	L
Carbon Disulfide	0.56794	0.50611	0.52190	0.57244	0.60701	A
Carbon Tetrachloride	0.48107	0.46186	0.48045	0.49463	0.48833	A
Chloroacetonitrile	690	3291	19445	55845	120463	L
Chlorobenzene *	2.63237	2.44519	2.41629	2.36315	2.35133	A
1-Chlorobutane	0.24916	0.25336	0.25827	0.25773	0.25037	A
Chlorodibromomethane	0.72274	0.69932	0.75810	0.83913	0.89607	A
Chloroethane	0.23312	0.19132	0.16812	0.16680	0.16982	A
2-Chloroethylvinyl ether		194	1147	4150	11064	L
Chloroform **	34082	120948	452230	1131734	2282175	L
1-Chlorohexane	7140	42958	231416	685474	1494181	L
Chloromethane *	0.42756	0.36516	0.34107	0.32891	0.32587	A
Chloroprene	0.39427	0.37519	0.40739	0.42355	0.42113	A
3-Chloro-1-propene	7451	30544	131378	347064	731586	L
o-Chlorotoluene	1.96066	2.19002	2.58690	2.64845	2.72309	A
p-Chlorotoluene	1.80202	1.96606	2.39720	2.46143	2.52331	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.39402	0.39397	0.44707	0.45794	0.44351	A
1,2-Dibromo-3-Chloropropane	0.12788	0.08870	0.09907	0.11046	0.12063	A
1,2-Dibromoethane	0.66563	0.64093	0.64736	0.67777	0.70891	A
Dibromomethane	0.23730	0.20183	0.20358	0.20070	0.20138	A
trans-1,4-Dichloro-2-butene	1285	7217	43883	129597	282167	L
1,2-Dichlorobenzene	1.70345	1.61897	1.73793	1.73861	1.76151	A
1,3-Dichlorobenzene	1.75375	1.77202	1.86616	1.81477	1.83107	A
1,4-Dichlorobenzene	1.99683	1.87531	1.90039	1.84388	1.84730	A
Dichlorodifluoromethane	0.64565	0.58608	0.54864	0.53746	0.51846	A
1,1-Dichloroethane *	0.61713	0.52204	0.53544	0.52066	0.51047	A
1,2-Dichloroethene, Total	22475	114510	468065	1225791	2559299	L
1,2-Dichloroethane	0.52285	0.46098	0.45963	0.44240	0.43717	A
1,1-Dichloroethene **	0.42133	0.35430	0.34750	0.34640	0.34301	A
cis-1,2-Dichloroethene	0.41312	0.38834	0.38995	0.39209	0.39475	A
trans-1,2-Dichloroethene	0.36877	0.33961	0.32180	0.31488	0.31358	A
Dichlorofluoromethane	0.57486	0.52133	0.48741	0.48687	0.48296	A
1,1-Dichloro-2-Propanone	353	3518	17184	51582	110723	L
2,2-Dichloropropane	0.40606	0.37876	0.38145	0.39192	0.40443	A
1,3-Dichloropropane	1.17048	1.08399	1.09515	1.11269	1.14500	A
1,2-Dichloropropane **	0.28120	0.26864	0.27794	0.27934	0.27981	A
1,1-Dichloropropene	0.39190	0.41076	0.43693	0.44204	0.43620	A
cis-1,3-Dichloropropene	9239	49640	252858	761321	1735847	Q
trans-1,3-Dichloropropene	7210	45092	247474	714181	1582448	L
1,3-Dichloropropene, Total	16449	94732	500332	1475502	3318295	L
Diisobutylene	36774	101793	373036	970158	2018678	L
Diisopropyl ether	0.72247	0.60878	0.63018	0.65152	0.66260	A
1,4-Dioxane	1783	9356	48744	146938	318038	L
Ethyl Acetate	0.19534	0.17045	0.18467	0.19081	0.19355	A
Ethyl ether	0.15565	0.13953	0.13942	0.14466	0.14833	A
Ethyl Methacrylate	5813	36086	202648	620998	1361074	L
Ethyl tert-butyl ether	0.66750	0.63733	0.66933	0.69588	0.72425	A
Ethylbenzene **	0.96455	1.10340	1.19698	1.21734	1.21229	A
Freon 113	0.27967	0.27761	0.26271	0.25516	0.24774	A
Heptane	3131	22409	114774	328083	697579	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.50552	0.49797	0.52502	0.53916	0.55995	A
Hexachloroethane	0.42339	0.39473	0.46635	0.51053	0.55168	A
Hexane	0.36936	0.33531	0.33149	0.33576	0.33848	A
2-Hexanone	12603	72834	411611	1207505	2501925	L
Iodomethane	1499	8057	62527	248183	586024	L
Isobutyl alcohol	2681	13208	77882	226490	483970	L
Isopropyl Alcohol	2560	8009	28472	84066	180476	L
Isopropylbenzene	24097	163674	940868	2729302	5870170	L
p-Isopropyltoluene	4573	37518	233101	682067	1449054	L
Methyl acetate	1266	6346	23518	65043	133312	L
Methyl acrylate	0.17186	0.18016	0.20137	0.21049	0.21701	A
Methacrylonitrile	3257	17132	77797	193734	414159	L
Methyl cyclohexane	0.99997	0.95124	1.07710	1.12481	1.10934	A
Methyl methacrylate	3682	17866	92060	279510	645683	L
Methyl t-Butyl Ether	0.73966	0.62343	0.60801	0.62341	0.64108	A
4-Methyl-2-Pentanone(MIBK)	0.33818	0.35562	0.42467	0.46078	0.45541	A
Methylene Chloride	15408	51231	187554	461123	950532	Q
Naphthalene	10062	58023	359528	1492388	3559426	Q
Nitrobenzene	2413	10052	48164	179911	531680	Q
2-Nitropropane	5832	27005	151017	486216	1081589	L
Octane	2424	14873	97745	285730	622364	L
Pentachloroethane	0.67422	0.58192	0.60263	0.61088	0.62574	A
Pentane	0.16375	0.14555	0.13161	0.12932	0.12887	A
n-Propanol	0.02151	0.01843	0.01833	0.01786	0.01728	A
Propionitrile	0.04100	0.03073	0.03237	0.03205	0.03099	A
n-Propylbenzene	6248	48257	281351	780924	1631648	L
Styrene	14324	101739	639631	1775739	3812796	L
1,1,1,2-Tetrachloroethane	0.89983	0.83502	0.84340	0.86031	0.88491	A
1,1,2,2-Tetrachloroethane *	0.89525	0.76352	0.75516	0.73621	0.73273	A
Tetrachloroethene	1.00831	0.94954	0.88261	0.82744	0.80475	A
Tetrahydrofuran	0.04942	0.04534	0.05120	0.05530	0.05439	A
Toluene **	1.62322	1.65959	1.90250	1.93951	1.94551	A
Total Xylenes	1.04318	1.15782	1.36349	1.46927	1.49842	A
1,2,3-Trichlorobenzene	7550	39360	249431	786071	1696605	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	8497	47878	266939	877655	2015776	Q
1,1,1-Trichloroethane	0.53276	0.52165	0.53572	0.54452	0.54066	A
1,1,2-Trichloroethane	0.66730	0.59094	0.55589	0.56002	0.54956	A
Trichloroethene	0.41302	0.36320	0.37141	0.35510	0.34478	A
Trichlorofluoromethane	0.76477	0.66376	0.64217	0.62206	0.60276	A
1,2,3-Trichloropropane	0.31186	0.28037	0.27851	0.26730	0.26207	A
1,2,4-Trimethylbenzene	18426	148574	882857	2445783	5240284	L
1,3,5-Trimethylbenzene	17038	146325	873939	2396302	5003116	L
Vinyl Acetate	0.05831	0.05205	0.05968	0.06404	0.06629	A
Vinyl Chloride **	0.30764	0.27842	0.27940	0.28800	0.29627	A
o-Xylene	10610	64845	352052	1041764	2292334	Q
mp-Xylene	1.07289	1.23784	1.42785	1.49798	1.50155	A
4-Bromofluorobenzene	11470	54248	250942	718955	1543783	L
Dibromofluoromethane	15431	60804	239097	618744	1257772	L
1,2-Dichloroethane-d4	19902	73503	257832	646948	1300148	L
Toluene-d8		155131	738419	1992340	4189344	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	588226			L	0.000000	63.630810		0.99960
Acrolein	0.03235	0.03366		A		0.030810		5.15925
Acrylonitrile	0.08190	0.08625		A		0.080490		5.81705
Acetonitrile	806781			Q	0.000000	0.015840	0.000170	0.99301
tert-Amyl Ethylether	3745020	5364		L	0.000000	2.050170		0.99401
tert-Amyl methyl ether	0.71213	0.50937		A		0.585210		13.83360
tert-Amyl Alcohol	598109	677		L	0.000000	64.506287		0.99230
Benzene	1.24626	1.45399		A		1.284790		6.05459
Benzyl Chloride				Q	0.000000	0.101190	0.025850	0.99981
Bromobenzene	0.98820	1.08785		A		0.964880		8.08784
Bromochloromethane	0.17759	0.24372		A		0.204570		11.19128
Bromodichloromethane	0.47525	0.35865		A		0.415870		9.55819
Bromoform *	0.53976	0.49603		A		0.453860		13.20382
Bromomethane	1350144			L	0.000000	5.577270		0.99819
2-Butanone	0.03315			A		0.033340		5.89231
tert.- Butyl Alcohol	0.02067			A		0.018550		6.52528
tert-Butylbenzene	2605843	2355		L	0.000000	1.351060		0.99977
n-Butylbenzene	2743613			L	0.000000	1.284400		0.99951
sec-Butylbenzene	12284888	10498		L	0.000000	0.283470		0.99965
Carbon Disulfide	0.65830	0.62657		A		0.580040		9.46046
Carbon Tetrachloride	0.50626	0.47001		A		0.483230		3.08130
Chloroacetonitrile	278576			L	0.000000	59.085529		0.99581
Chlorobenzene *	2.38884	2.99831		A		2.513640		9.29778
1-Chlorobutane	0.25255	0.32347		A		0.263560		10.10734
Chlorodibromomethane	0.95186	0.66969		A		0.790990		13.46837
Chloroethane	0.16347			A		0.182110		14.76712
2-Chloroethylvinyl ether	50806			L	0.749740	143		0.92638
Chloroform **	4662274	24493		L	0.000000	1.586400		0.99970
1-Chlorohexane	3290797	3247		L	0.000000	0.989980		0.99825
Chloromethane *	0.33724			A		0.354300		10.86143
Chloroprene	0.43544	0.48668		A		0.420520		8.42169
3-Chloro-1-propene	1478765	4279		L	0.000000	5.003750		0.99993
o-Chlorotoluene	2.74137	2.21018		A		2.437240		12.76798
p-Chlorotoluene	2.59094	2.08496		A		2.260850		13.57354
Cyclohexane	0.44042	0.42297		A		0.428560		6.01751
1,2-Dibromo-3-Chloropropane	0.13270	0.10828		A		0.112530		13.95394

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.73686	0.76998		A		0.692490		6.94497
Dibromomethane	0.21005	0.22589		A		0.211530		6.82275
trans-1,4-Dichloro-2-butene	639471	785		L	0.000000	5.601070		0.99738
1,2-Dichlorobenzene	1.79830	1.73935		A		1.728300		3.24700
1,3-Dichlorobenzene	1.85824	1.93292		A		1.832700		3.30825
1,4-Dichlorobenzene	1.84529	2.20493		A		1.930560		6.86371
Dichlorodifluoromethane	0.52613			A		0.560400		8.56753
1,1-Dichloroethane *		0.64618		A		0.558650		10.35265
1,2-Dichloroethene, Total	5479946	12653		L	0.000000	2.736730		0.99950
1,2-Dichloroethane	0.44077	0.49703		A		0.465830		6.94750
1,1-Dichloroethene **	0.35410	0.45973		A		0.375200		12.30473
cis-1,2-Dichloroethene	0.41278	0.42900		A		0.402860		3.85402
trans-1,2-Dichloroethene	0.32532	0.43867		A		0.346090		13.01861
Dichlorofluoromethane	0.50007	0.64268		A		0.528030		11.34755
1,1-Dichloro-2-Propanone	246176			L	0.000000	66.266380		0.99788
2,2-Dichloropropane	0.43097	0.46178		A		0.407910		7.25525
1,3-Dichloropropane	1.18329	1.18051		A		1.138730		3.64770
1,2-Dichloropropane **	0.29435	0.29549		A		0.282400		3.36185
1,1-Dichloropropene	0.44353	0.46809		A		0.432780		5.68599
cis-1,3-Dichloropropene	3902762	4845		Q	0.000000	1.000530	0.032870	0.99977
trans-1,3-Dichloropropene	3557487	3573		L	0.000000	0.920690		0.99721
1,3-Dichloropropene, Total	7460249	8418		L	0.000000	0.878820		0.99685
Diisobutylene	4231985	31147		L	0.000000	1.762380		0.99976
Diisopropyl ether	0.69067	0.76489		A		0.675870		8.02977
1,4-Dioxane	700477			L	0.000000	270		0.99753
Ethyl Acetate	0.20402	0.22733		A		0.195170		9.00974
Ethyl ether	0.15639	0.16629		A		0.150040		6.61628
Ethyl Methacrylate	3038972	2926		L	0.000000	1.075940		0.99745
Ethyl tert-butyl ether	0.76383	0.69316		A		0.693040		5.98172
Ethylbenzene **	1.22808	1.09998		A		1.146090		8.40516
Freon 113	0.24985	0.31887		A		0.270230		9.20786
Heptane	1458099	1200		L	0.000000	5.122110		0.99965
Hexachlorobutadiene	0.56546	0.65311		A		0.549460		9.51369
Hexachloroethane	0.58476	0.47466		A		0.486590		13.89578
Hexane	0.35532	0.33266		A		0.342620		4.15699
2-Hexanone	5485111	5540		L	0.000000	2.958700		0.99900

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1232633	810		L	0.000000	6.111500		0.99621
Isobutyl alcohol	1073380	2655		L	0.000000	70.581429		0.99774
Isopropyl Alcohol	402404			L	0.000000	94.261971		0.99720
Isopropylbenzene	12022709	13011		L	0.000000	0.290620		0.99966
p-Isopropyltoluene	3079857	2116		L	0.000000	1.144120		0.99962
Methyl acetate	281666	839		L	0.000000	26.521111		0.99977
Methyl acrylate	0.22777	0.20298		A		0.201660		9.80851
Methacrylonitrile	843127	1240		L	0.000000	8.794770		0.99989
Methyl cyclohexane	1.11775	0.81190		A		1.027440		11.22680
Methyl methacrylate	1435644	2004		L	0.000000	5.301240		0.99603
Methyl t-Butyl Ether	0.68991	0.81508		A		0.677230		11.26983
4-Methyl-2-Pentanone(MIBK)	0.46641	0.33182		A		0.404700		14.98581
Methylene Chloride	2023691	11567		Q	0.012800	0.251340	0.002870	0.99995
Naphthalene	8223079	5682		Q	0.000000	1.766300	0.087990	0.99898
Nitrobenzene	1631893	1449		Q	0.000000	0.015790	0.000460	0.99986
2-Nitropropane		2725		L	0.000000	7.253240		0.99573
Octane	1314597	694		L	0.000000	2.453770		0.99930
Pentachloroethane	0.66003	0.79144		A		0.649550		10.82930
Pentane	0.13226			A		0.138560		9.95122
n-Propanol	0.01684			A		0.018380		8.99559
Propionitrile	0.03225	0.03618		A		0.033650		10.99128
n-Propylbenzene	3449417	3178		L	0.000000	1.018900		0.99988
Styrene	8259279	7788		L	0.000000	0.428660		0.99934
1,1,1,2-Tetrachloroethane	0.92388	0.95758		A		0.886420		5.00815
1,1,2,2-Tetrachloroethane *	0.73899	0.94126		A		0.794730		10.83499
Tetrachloroethene	0.79875	1.13841		A		0.915690		13.68329
Tetrahydrofuran	0.05417			A		0.051640		7.35669
Toluene **	1.99234	1.87033		A		1.847570		7.91188
Total Xylenes	1.52811	1.17148		A		1.318820		14.66068
1,2,3-Trichlorobenzene	3728950	3363		Q	0.000000	0.945970	0.017820	0.99978
1,2,4-Trichlorobenzene	4486355	4585		Q	0.000000	1.072580	0.031500	0.99953
1,1,1-Trichloroethane	0.55389	0.67258		A		0.557400		9.28761
1,1,2-Trichloroethane	0.56540	0.58458		A		0.581950		6.96413
Trichloroethene	0.35167	0.43847		A		0.376810		9.35578
Trichlorofluoromethane	0.61275			A		0.651380		9.16288
1,2,3-Trichloropropane	0.26593	0.38029		A		0.292330		14.44028

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	11059386	10614		L	0.000000	0.318090		0.99977
1,3,5-Trimethylbenzene	10550634	9402		L	0.000000	0.332880		0.99990
Vinyl Acetate	0.06798	0.05767		A		0.060860		9.14644
Vinyl Chloride **	0.31640			A		0.294360		5.22809
o-Xylene	4941923	5433		Q	0.000000	1.395210	0.022360	0.99979
mp-Xylene	1.52119	1.26003		A		1.359910		12.63029
4-Bromofluorobenzene		7412		L	0.000000	1.092370		0.99922
Dibromofluoromethane				L	0.000000	2.854140		0.99964
1,2-Dichloroethane-d4	2701740			L	0.000000	2.748500		0.99972
Toluene-d8	8957805			L	0.053370	0.356160		0.99988

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2180033

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 15051963.D Lab Sample ID: 2180033

Date Analyzed: 5/19/2015 Time Analyzed: 21:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2180034(LCS)	2180034	15051964.D	22:01
MRC-MW-DUP06-051315	2070699006	15051968.D	23:10
MRC-MW-87A-051315	2070699007	15051969.D	23:27
MRC-MW-41A-051315	2070699012	15051970.D	23:45
MRC-MW-48A-051315-DL2	2070699010	15051971.D	00:02
MRC-MW-74B-051315-DL1	2070699008	15051974.D	00:53

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.51	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.39	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.31	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,1,2-Trichloroethane	20.0		19.4	96.9	(82-126)
Trichloroethene	20.0		20.0	100	(77-124)
Trichlorofluoromethane	20.0		17.1	85.6	(38-123)
Vinyl Chloride	20.0		17.8	88.9	(27-138)
o-Xylene	20.0		17.9	89.6	(79-124)
mp-Xylene	40.0		43.4	109	(79-125)
Acetone	100		95.5	95.5	(40-151)
Benzene	20.0		20.0	99.8	(80-124)
Bromochloromethane	20.0		19.8	98.9	(73-117)
Bromodichloromethane	20.0		19.9	99.3	(79-126)
Bromoform	20.0		18.0	90.1	(70-123)
Bromomethane	20.0		20.7	104	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		16.5	82.6	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		19.3	96.7	(85-117)
Chlorodibromomethane	20.0		19.4	97	(77-122)
Chloroethane	20.0		15.8	79.1	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		16.8	84	(38-156)
Cyclohexane	20.0		20.6	103	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.7	(59-133)
1,2-Dibromoethane	20.0		18.6	92.9	(80-124)
1,2-Dichlorobenzene	20.0		20.3	101	(82-118)
1,3-Dichlorobenzene	20.0		20.5	102	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.4	(81-116)
Dichlorodifluoromethane	20.0		14.2	71.2	(17-166)
1,1-Dichloroethane	20.0		18.5	92.5	(78-124)
1,2-Dichloroethane	20.0		19.4	96.8	(70-133)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.6	97.8	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.2	(71-122)
1,2-Dichloropropane	20.0		20.2	101	(81-127)
cis-1,3-Dichloropropene	20.0		17.8	89.2	(81-121)
trans-1,3-Dichloroprope	20.0		16.6	82.8	(78-126)
1,4-Dioxane	500		406	81.1	(1-280)
Ethylbenzene	20.0		21.2	106	(80-124)
Freon 113	20.0		18.3	91.6	(50-130)
2-Hexanone	100		84.4	84.4	(65-154)
Isopropylbenzene	20.0		18.8	93.8	(73-129)
Methyl acetate	20.0		18.9	94.6	(70-130)
Methyl cyclohexane	20.0		21.1	105	(70-130)
Methyl t-Butyl Ether	20.0		17.8	88.9	(69-115)
4-Methyl-2-Pentanone(MI	100		105	105	(71-146)
Methylene Chloride	20.0		20.9	104	(76-121)
Styrene	20.0		19.0	94.8	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.0	95.1	(74-135)
Tetrachloroethene	20.0		19.1	95.6	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.5	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		19.1	95.4	(66-130)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 15052150.D BFB Injection Date: 5/21/2015

Instrument ID: ms15.i BFB Injection Time: 19:16

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.6
75	30.0 - 60.0% of mass 95	46.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	79.2
175	5.0 - 9.0% of mass 174	5.9 (7.4) 1
176	95.0 - 101.0% of mass 174	75.4 (95.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15052152.D	5/21/2015	19:52
2181443(MB)	2181443	15052155.D	5/21/2015	20:59
2181444(LCS)	2181444	15052156.D	5/21/2015	21:16
MRC-MW-74B-051315-DL500	2070699008	15052183.D	5/22/2015	04:59

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.1	100.0	L
Acrolein	0.0308	0.0299			-2.9	100.0	A
Acrylonitrile	0.0805	0.0758			-5.9	100.0	A
Acetonitrile	250		237		-5.3	100.0	Q
tert-Amyl Ethylether	50.0000		38.9216		-22.2	100.0	L
tert-Amyl methyl ether	0.5852	0.5692			-2.7	100.0	A
tert-Amyl Alcohol	250		186		-25.4	100.0	L
Benzene	1.2848	1.2270			-4.5	100.0	A
Benzyl Chloride	50.0000		48.4471		-3.1	100.0	Q
Bromobenzene	0.9649	0.9320			-3.4	100.0	A
Bromochloromethane	0.2046	0.1768			-13.6	100.0	A
Bromodichloromethane	0.4159	0.4112			-1.1	100.0	A
Bromoform	0.4539	0.4125		0.100	-9.1	100.0	A
Bromomethane	50.0000		47.5694		-4.9	100.0	L
2-Butanone	0.0333	0.0294			-11.9	100.0	A
tert.- Butyl Alcohol	0.0185	0.0163			-12.0	100.0	A
tert-Butylbenzene	50.0000		47.7690		-4.5	100.0	L
n-Butylbenzene	50.0000		46.5102		-7.0	100.0	L
sec-Butylbenzene	50.0000		49.7133		-0.6	100.0	L
Carbon Disulfide	0.5800	0.5862			1.1	100.0	A
Carbon Tetrachloride	0.4832	0.4545			-5.9	100.0	A
Chloroacetonitrile	250		230		-8.0	100.0	L
Chlorobenzene	2.5136	2.3020		0.300	-8.4	100.0	A
1-Chlorobutane	0.2636	0.2586			-1.9	100.0	A
Chlorodibromomethane	0.7910	0.7796			-1.4	100.0	A
Chloroethane	0.1821	0.1734			-4.8	100.0	A
2-Chloroethylvinyl ether	50.0000		36.8015		-26.4	100.0	L
Chloroform	50.0000		49.1609		-1.7	20.0	L
1-Chlorohexane	50.0000		44.7149		-10.6	100.0	L
Chloromethane	0.3543	0.3290		0.100	-7.2	100.0	A
Chloroprene	0.4205	0.4052			-3.6	100.0	A
3-Chloro-1-propene	50.0000		52.2763		4.6	100.0	L
o-Chlorotoluene	2.4372	2.6468			8.6	100.0	A
p-Chlorotoluene	2.2608	2.4655			9.1	100.0	A
Cyclohexane	0.4286	0.4389			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1125	0.0994			-11.7	100.0	A
1,2-Dibromoethane	0.6925	0.6270			-9.5	100.0	A
Dibromomethane	0.2115	0.1885			-10.9	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		44.2129		-11.6	100.0	L
1,2-Dichlorobenzene	1.7283	1.6606			-3.9	100.0	A
1,3-Dichlorobenzene	1.8327	1.7582			-4.1	100.0	A
1,4-Dichlorobenzene	1.9306	1.7789			-7.9	100.0	A
Dichlorodifluoromethane	0.5604	0.4879			-12.9	100.0	A
1,1-Dichloroethane	0.5587	0.5026		0.100	-10.0	100.0	A
1,2-Dichloroethene, Total	100		93.1725		-6.8	100.0	L
1,2-Dichloroethane	0.4658	0.4173			-10.4	100.0	A
1,1-Dichloroethene	0.3752	0.3375			-10.1	20.0	A
cis-1,2-Dichloroethene	0.4029	0.3835			-4.8	100.0	A
trans-1,2-Dichloroethene	0.3461	0.3155			-8.8	100.0	A
Dichlorofluoromethane	0.5280	0.4763			-9.8	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.4079	0.3817			-6.4	100.0	A
1,3-Dichloropropane	1.1387	1.0885			-4.4	100.0	A
1,2-Dichloropropane	0.2824	0.2780			-1.5	20.0	A
1,1-Dichloropropene	0.4328	0.4237			-2.1	100.0	A
cis-1,3-Dichloropropene	50.0000		47.5647		-4.9	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.0680		-13.9	100.0	L
1,3-Dichloropropene, Total	100		90.6327		-9.4	100.0	L
Diisobutylene	50.0000		50.5871		1.2	100.0	L
Diisopropyl ether	0.6759	0.6197			-8.3	100.0	A
1,4-Dioxane	1250		1007		-19.5	100.0	L
Ethyl Acetate	0.1952	0.1834			-6.1	100.0	A
Ethyl ether	0.1500	0.1412			-5.9	100.0	A
Ethyl Methacrylate	50.0000		42.0274		-15.9	100.0	L
Ethyl tert-butyl ether	0.6930	0.6445			-7.0	100.0	A
Ethylbenzene	1.1461	1.1774			2.7	20.0	A
Freon 113	0.2702	0.2445			-9.5	100.0	A
Heptane	50.0000		48.6481		-2.7	100.0	L
Hexachlorobutadiene	0.5495	0.4655			-15.3	100.0	A
Hexachloroethane	0.4866	0.5083			4.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3426	0.3479			1.6	100.0	A
2-Hexanone	250		232		-7.3	100.0	L
Iodomethane	50.0000		35.6947		-28.6	100.0	L
Isobutyl alcohol	500		321		-35.9	100.0	L
Isopropyl Alcohol	250		207		-17.2	100.0	L
Isopropylbenzene	50.0000		48.8848		-2.2	100.0	L
p-Isopropyltoluene	50.0000		46.6939		-6.6	100.0	L
Methyl acetate	50.0000		44.6906		-10.6	100.0	L
Methyl acrylate	0.2017	0.2000			-0.8	100.0	A
Methacrylonitrile	50.0000		48.5976		-2.8	100.0	L
Methyl cyclohexane	1.0274	1.0882			5.9	100.0	A
Methyl methacrylate	50.0000		42.1466		-15.7	100.0	L
Methyl t-Butyl Ether	0.6772	0.5794			-14.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.4047	0.4528			11.9	100.0	A
Methylene Chloride	50.0000		50.6088		1.2	100.0	Q
Naphthalene	50.0000		44.3614		-11.3	100.0	Q
Nitrobenzene	500		438		-12.4	100.0	Q
2-Nitropropane	250		214		-14.4	100.0	L
Octane	50.0000		44.8317		-10.3	100.0	L
Pentachloroethane	0.6496	0.6157			-5.2	100.0	A
Pentane	0.1386	0.1306			-5.7	100.0	A
n-Propanol	0.0184	0.0174			-5.5	100.0	A
Propionitrile	0.0336	0.0307			-8.7	100.0	A
n-Propylbenzene	50.0000		48.7376		-2.5	100.0	L
Styrene	50.0000		47.0335		-5.9	100.0	L
1,1,1,2-Tetrachloroethane	0.8864	0.8120			-8.4	100.0	A
1,1,2,2-Tetrachloroethane	0.7947	0.7169		0.300	-9.8	100.0	A
Tetrachloroethene	0.9157	0.7639			-16.6	100.0	A
Tetrahydrofuran	0.0516	0.0531			2.9	100.0	A
Toluene	1.8476	1.8772			1.6	20.0	A
Total Xylenes	1.3188	1.4128			7.1	100.0	A
1,2,3-Trichlorobenzene	50.0000		43.2957		-13.4	100.0	Q
1,2,4-Trichlorobenzene	50.0000		42.7612		-14.5	100.0	Q
1,1,1-Trichloroethane	0.5574	0.5023			-9.9	100.0	A
1,1,2-Trichloroethane	0.5820	0.5435			-6.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-033

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3768	0.3369			-10.6	100.0	A
Trichlorofluoromethane	0.6514	0.5813			-10.8	100.0	A
1,2,3-Trichloropropane	0.2923	0.2498			-14.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		47.2511		-5.5	100.0	L
1,3,5-Trimethylbenzene	50.0000		48.4867		-3.0	100.0	L
Vinyl Acetate	0.0609	0.0584			-4.0	100.0	A
Vinyl Chloride	0.2944	0.2828			-3.9	20.0	A
o-Xylene	50.0000		47.3017		-5.4	100.0	Q
mp-Xylene	1.3599	1.4425			6.1	100.0	A
4-Bromofluorobenzene	50.0000		42.9408		-14.1	100.0	L
Dibromofluoromethane	50.0000		43.0623		-13.9	100.0	L
1,2-Dichloroethane-d4	50.0000		42.5168		-15.0	100.0	L
Toluene-d8	50.0000		43.9767		-12.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2181443

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-033

Lab File ID: 15052155.D Lab Sample ID: 2181443

Date Analyzed: 5/21/2015 Time Analyzed: 20:59

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2181444(LCS)	2181444	15052156.D	21:16
MRC-MW-74B-051315-DL5	2070699008	15052183.D	04:59

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.25	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		101	101	(40-151)
Benzene	20.0		20.1	101	(80-124)
Bromochloromethane	20.0		18.9	94.5	(73-117)
Bromodichloromethane	20.0		20.1	101	(79-126)
Bromoform	20.0		17.7	88.7	(70-123)
Bromomethane	20.0		17.1	85.6	(45-148)
2-Butanone	100		106	106	(50-152)
Carbon Disulfide	20.0		14.2	71	(57-131)
Carbon Tetrachloride	20.0		19.1	95.5	(62-132)
Chlorobenzene	20.0		19.3	96.5	(85-117)
Chlorodibromomethane	20.0		18.8	93.8	(77-122)
Chloroethane	20.0		15.1	75.7	(51-142)
Chloroform	20.0		21.7	108	(78-122)
Chloromethane	20.0		15.2	75.9	(38-156)
Cyclohexane	20.0		19.1	95.7	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.3	(59-133)
1,2-Dibromoethane	20.0		18.5	92.7	(80-124)
1,2-Dichlorobenzene	20.0		20.0	100	(82-118)
1,3-Dichlorobenzene	20.0		20.5	103	(81-118)
1,4-Dichlorobenzene	20.0		19.8	99.1	(81-116)
Dichlorodifluoromethane	20.0		10.8	54.1	(17-166)
1,1-Dichloroethane	20.0		18.8	93.9	(78-124)
1,2-Dichloroethane	20.0		19.5	97.6	(70-133)
1,1-Dichloroethene	20.0		16.1	80.5	(63-128)
cis-1,2-Dichloroethene	20.0		19.5	97.5	(78-125)
trans-1,2-Dichloroethen	20.0		18.8	93.8	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.3	(81-121)
trans-1,3-Dichloroprope	20.0		16.9	84.5	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.2	(1-280)
Ethylbenzene	20.0		20.9	105	(80-124)
Freon 113	20.0		16.7	83.3	(50-130)
2-Hexanone	100		90.0	90	(65-154)
Isopropylbenzene	20.0		18.8	94.2	(73-129)
Methyl acetate	20.0		19.6	97.9	(70-130)
Methyl cyclohexane	20.0		19.7	98.5	(70-130)
Methyl t-Butyl Ether	20.0		17.3	86.7	(69-115)
4-Methyl-2-Pentanone(MI	100		114	114	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		19.2	95.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		17.8	89.1	(72-124)
Toluene	20.0		20.6	103	(80-125)
1,2,3-Trichlorobenzene	20.0		15.7	78.4	(61-126)
1,2,4-Trichlorobenzene	20.0		15.1	75.7	(67-123)
1,1,1-Trichloroethane	20.0		18.4	92.2	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.2	(82-126)
Trichloroethene	20.0		19.7	98.3	(77-124)
Trichlorofluoromethane	20.0		15.5	77.3	(38-123)
Vinyl Chloride	20.0		16.0	80.1	(27-138)
o-Xylene	20.0		17.1	85.7	(79-124)
mp-Xylene	40.0		42.1	105	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-033

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2180033(MB)	92.7	91.2	94.4	95.0	0
02	2180034(LCS)	89.0	85.1	86.2	87.6	0
03	MRC-MW-DUP06-051315	92.3	92.6	96.3	95.0	0
04	MRC-MW-87A-051315	91.8	91.9	96.8	94.8	0
05	MRC-MW-41A-051315	87.2	93.4	98.6	93.9	0
06	MRC-MW-48A-051315-DL25	89.9	93.5	95.7	92.6	0
07	MRC-MW-74B-051315-DL100	89.5	94.0	99.6	92.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-033

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
08	2181443(MB)	87.2	88.5	93.5	91.9	0
09	2181444(LCS)	83.1	84.3	87.0	84.7	0
10	MRC-MW-74B-051315-DL500	87.4	94.0	101	91.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-033

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
11	2177870(LCS)	108	98.6	98.3	101	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(85-114)
SMC2 (DBFM) = Dibromofluoromethane	(80-119)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(81-118)
SMC4 (TOL) = Toluene-d8	(89-112)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-033

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
12	2178404(MB)	109	90.6	95.1	101	0
13	2178405(LCS)	107	95.8	94.2	99.6	0
14	TB-051215	108	93.9	97.0	103	0
15	MRC-MW-25A-051315	110	93.6	95.8	102	0
16	MRC-MW-74B-051315	110	93.7	97.5	99.4	0
17	MRC-MW-48A-051315	113	94.5	95.7	102	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Lab File ID: 315051407.D Date Analyzed: 5/14/2015

Instrument ID: ms03.i Time Analyzed: 12:20

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	581104	5.672	534163	7.429	1544615	3.697
UPPER LIMIT	1162208	6.172	1068326	7.929	3089230	4.197
LOWER LIMIT	290552	5.172	267082	6.929	772308	3.197
SAMPLE NO.						
2177870(LCS)	605883	5.667	536457	7.429	1603544	3.697

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Lab File ID: 315051501.D Date Analyzed: 5/15/2015

Instrument ID: ms03.i Time Analyzed: 11:47

GC Column: RTXVRX ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	620782	5.672	556084	7.429	1627988	3.697
UPPER LIMIT	1241564	6.172	1112168	7.929	3255976	4.197
LOWER LIMIT	310391	5.172	278042	6.929	813994	3.197
SAMPLE NO.						
1800	620782	5.672	556084	7.429	1627988	3.697
2178404(MB)	576550	5.672	477949	7.429	1589997	3.703
2178405(LCS)	620099	5.673	538178	7.429	1623556	3.697
TB-051215	546514	5.672	458399	7.429	1511649	3.703
MRC-MW-25A-051315	536278	5.672	440748	7.429	1466750	3.703
MRC-MW-74B-051315	535665	5.673	453492	7.429	1456036	3.703
MRC-MW-48A-051315	539564	5.673	448554	7.430	1460305	3.703

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Lab File ID: 15051957.D Date Analyzed: 5/19/2015

Instrument ID: ms15.i Time Analyzed: 20:01

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	442721	5.913	482015	7.686	1040326	3.910
UPPER LIMIT	885442	6.413	964030	8.186	2080652	4.410
LOWER LIMIT	221361	5.413	241008	7.186	520163	3.410
SAMPLE NO.						
2180033(MB)	340198	5.912	318831	7.686	905002	3.910
2180034(LCS)	443472	5.913	470706	7.686	1024069	3.910
MRC-MW-DUP06-0513	319745	5.912	294290	7.686	861465	3.910
MRC-MW-87A-051315	320242	5.913	299346	7.686	870762	3.910
MRC-MW-41A-051315	300535	5.913	284141	7.686	818436	3.910
MRC-MW-48A-051315	311256	5.913	283881	7.686	841748	3.910
MRC-MW-74B-051315	314277	5.912	285070	7.686	795371	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-033

Lab File ID: 15052152.D Date Analyzed: 5/21/2015

Instrument ID: ms15.i Time Analyzed: 19:52

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	446497	5.913	474860	7.686	1061227	3.910
UPPER LIMIT	892994	6.413	949720	8.186	2122454	4.410
LOWER LIMIT	223249	5.413	237430	7.186	530614	3.410
SAMPLE NO.						
1800	446497	5.913	474860	7.686	1061227	3.910
2181443(MB)	318636	5.912	286997	7.686	865950	3.910
2181444(LCS)	433839	5.913	450022	7.686	982691	3.910
MRC-MW-74B-051315	278882	5.913	242399	7.686	760335	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Semivolatile Organics by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1800	1800	05/30/15	1402	8.36	
02	2184609	2184609	05/30/15	1428	8.36	
03	2184610LCSLO	2184610	05/30/15	1452	8.36	
04	MRC-MW-25A-0	2070699005	05/30/15	1518	8.36	
05	MRC-MW-41A-0	2070699012	05/30/15	1543	8.36	
06	MIDCHECK-5	MIDCHECK-5	05/30/15	1923	8.36	
07	MRC-MW-07A	2070699002	05/30/15	2334	8.36	
08	MRC-MW-07A M	2184607	05/30/15	2359	8.36	
09	MRC-MW-07A M	2184608	05/31/15	0023	8.36	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2ND-0.1

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix: (soil/water) WATER Lab Sample ID: 2ND-0.1

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12081312

Level: (low/med) LOW

% Moisture: _____ Decanted: (Y/N)___

Concentrated Extract Volume: 2000(uL) Date Analyzed: 08/13/14

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	1.8	_____

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date: 05/30/15 Time: 1402

Lab File ID: 12053001 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.41e-003	3.5e-003	1.3080559	0.00001	-2.57	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6160684	0.6160684	0.00001	-13.47	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: MS12 Calibration Date: 05/30/15 Time: 1923

Lab File ID: 12053014 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.96e-002	5.e-002	1.6095694	0.00001	-20.80	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6214328	0.6214328	0.00001	-12.72	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Lab File ID: 12053002 Lab Sample ID: 2184609

Instrument ID: MS12 Date Extracted: 05/30/15

Matrix: (soil/water) WATER Date Analyzed: 05/30/15

Level:(low/med) LOW Time Analyzed: 1428

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2184610LCSLO	2184610	12053003	05/30/15
02	MRC-MW-25A-0	2070699005	12053004	05/30/15
03	MRC-MW-41A-0	2070699012	12053005	05/30/15
04	MRC-MW-07A	2070699002	12053024	05/30/15
05	MRC-MW-07A M	2184607	12053025	05/30/15
06	MRC-MW-07A M	2184608	12053026	05/31/15
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COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix: (soil/water) WATER Lab Sample ID: 2184609

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12053002

Level: (low/med) LOW Date Received: 05/30/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/30/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/30/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix Spike - Sample No.: 2184610LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0587560	84	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix Spike - 2184607 Sample No.: MRC-MW-07A(2070699002)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,4-Dioxane	4.00000	3.16353	6.11811	74	70-130

Matrix Spike - 2184608 Sample No.: MRC-MW-07A(2070699002)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,4-Dioxane	4.00000	6.27769	78	5	20	70-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2184609	83								0
02	2184610LCSLO	97								0
03	MRC-MW-25A-0	81								0
04	MRC-MW-41A-0	85								0
05	MRC-MW-07A	84								0
06	MRC-MW-07A M	84								0
07	MRC-MW-07A M	80								0
08										
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QC LIMITS

S1 = 1,4-Dioxane-d8 (70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/30/15

Lab File ID (Standard): 12053001 Time Analyzed: 1402

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56807	6.35				
	UPPER LIMIT	73849	6.85				
	LOWER LIMIT	39765	5.85				
	SAMPLE NO.						
01	2184609	58574	6.35				
02	2184610LCSLO	57330	6.35				
03	MRC-MW-25A-0	57335	6.35				
04	MRC-MW-41A-0	55424	6.35				
05							
06							
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22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/30/15

Lab File ID (Standard): 12053014 Time Analyzed: 1923

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	53824	6.35				
	UPPER LIMIT	69971	6.85				
	LOWER LIMIT	37677	5.85				
	SAMPLE NO.						
01	MRC-MW-07A	51997	6.35				
02	MRC-MW-07A M	52411	6.35				
03	MRC-MW-07A M	50723	6.35				
04							
05							
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21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
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20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

Light Petroleum Gases by Method RSK-175 Summary Forms

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	05/15/15	0617		
02	LEVEL5	LEVEL5	05/15/15	0635		
03	2178230	2178230	05/15/15	0657		
04	MRC-MW-25A-0	2070699005	05/15/15	1032		
05	MRC-MW-25A-0	2178232	05/15/15	1047		
06	MRC-MW-48A-0	2070699010	05/15/15	1121		
07	LEVEL5	LEVEL5	05/15/15	1219		
08	MRC-MW-24A-0	2070699011	05/15/15	1233		
09	LEVEL5	LEVEL5	05/15/15	1249		
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RF10: MD2A009 RF50: MD2A002 RF100: MD2A003
RF500: MD2A004 RF1000: MD2A005 RF10000: MD2A006

COMPOUND	RF10	RF50	RF100	RF500	RF1000	RF10000
METHANE	32.711	28.296	25.507	24.980	23.513	23.330
ETHENE	50.865	48.801	48.238	46.332	43.516	
ETHANE	52.610	49.609	48.713	46.893	44.002	
PROPANE	74.249	71.266	71.078	69.260	65.151	65.296
N-BUTANE	100.200	92.620	91.190	91.852	86.759	82.379
ISO-BUTANE	90.200	89.460	88.960	90.476	85.102	82.421

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RT1: MD2A009 RT2: MD2A002 RT3: MD2A003
RT4: MD2A004 RT5: MD2A005 RT6: MD2A006

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
METHANE	0.500	0.480	0.490	0.490	0.490	0.490
ETHENE	1.900	1.890	1.890	1.890	1.890	
ETHANE	2.370	2.360	2.360	2.360	2.360	
PROPANE	4.480	4.470	4.470	4.470	4.470	4.460
N-BUTANE	6.700	6.700	6.700	6.690	6.690	6.680
ISO-BUTANE	6.190	6.170	6.170	6.170	6.160	6.160

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RT7: MD2A007

COMPOUND	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
METHANE	0.490	0.490	0.457	0.536
ETHENE		1.892	1.751	2.056
ETHANE		2.362	2.180	2.560
PROPANE	4.430	4.464	4.119	4.835
N-BUTANE	6.610	6.681	6.164	7.236
ISO-BUTANE	6.080	6.157	5.692	6.682

FORM VI VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date: 05/15/15 Time: 0617

Lab File ID: MEFA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.590207	0.01	-7.11	15.00	AVRG	
ETHENE	47.550000	46.831353	0.01	-1.51	15.00	AVRG	
ETHANE	48.365000	46.754870	0.01	-3.33	15.00	AVRG	
PROPANE	67.640000	67.958412	0.01	0.47	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-NT
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<- NT

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date: 05/15/15 Time: 0635

Lab File ID: MEFA002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.176832	0.01	-8.73	15.00	AVRG
ETHENE	47.550000	43.594727	0.01	-8.32	15.00	AVRG
ETHANE	48.365000	45.358416	0.01	-6.22	15.00	AVRG
PROPANE	67.640000	67.170780	0.01	-0.69	15.00	AVRG
N-BUTANE	88.662000	90.195000	0.01	1.73	15.00	AVRG
ISO-BUTANE	85.930000	88.490000	0.01	2.98	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date: 05/15/15 Time: 1219

Lab File ID: MEFA016 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.259867	0.01	-8.41	15.00	AVRG
ETHENE	47.550000	43.848633	0.01	-7.78	15.00	AVRG
ETHANE	48.365000	45.683168	0.01	-5.54	15.00	AVRG
PROPANE	67.640000	68.000000	0.01	0.53	15.00	AVRG
N-BUTANE	88.662000	91.059000	0.01	2.70	15.00	AVRG
ISO-BUTANE	85.930000	89.481000	0.01	4.13	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Instrument ID: GC03 Calibration Date: 05/15/15 Time: 1249

Lab File ID: MEFA018 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	24.253203	0.01	-4.50	15.00	AVRG
ETHENE	47.550000	45.758789	0.01	-3.77	15.00	AVRG
ETHANE	48.365000	47.635644	0.01	-1.51	15.00	AVRG
PROPANE	67.640000	70.836130	0.01	4.72	15.00	AVRG
N-BUTANE	88.662000	95.669000	0.01	7.90	15.00	AVRG
ISO-BUTANE	85.930000	93.745000	0.01	9.09	15.00	AVRG

FORM VII VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2178230

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Lab File ID: MEFA003 Lab Sample ID: 2178230

Date Analyzed: 05/15/15 Time Analyzed: 0657

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-25A-0	2070699005	MEFA013	1032
02	MRC-MW-25A-0	2178232	MEFA014	1047
03	MRC-MW-48A-0	2070699010	MEFA015	1121
04	MRC-MW-24A-0	2070699011	MEFA017	1233
05				
06				
07				
08				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2178230

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix: (soil/water) WATER Lab Sample ID: 2178230

Sample wt/vol: _____ (g/mL) ML Lab File ID: MEFA003

Level: (low/med) LOW Date Received: 05/15/15

% Moisture: not dec. _____ Date Analyzed: 05/15/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
MRC-MW-25
A-051315 DUP

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM033

Matrix: (soil/water) WATER Lab Sample ID: 2178232

Sample wt/vol: _____ (g/mL) ML Lab File ID: MEFA014

Level: (low/med) LOW Date Received: 05/13/15

% Moisture: not dec. _____ Date Analyzed: 05/15/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	10.9	
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

FORM I VOA

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1513562**

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 448332
Analyzed: 05/26/2015 10:58
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 448333
Analyzed: 05/26/2015 11:17
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.96	5.00	99.3	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1513562001	**MS:** 448334	**MSD:** 448335
Analyzed: 05/26/2015 11:36	**Analyzed:** 05/26/2015 11:55	**Analyzed:** 05/26/2015 12:14
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	4.85	5	97.0	85.3	112.8	4.58	91.6	5.74	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513562

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	448328			**CCV:**	448336		
Analyzed:	05/26/2015 09:41			**Analyzed:**	05/26/2015 14:09		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 15%			**Criteria:**	± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.6	25.0	102	25.1	25.0	100

Interference Check Sample

ICSA:	448331		
Analyzed:	05/26/2015 10:38		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	448330			**LODV:**	448337		
Analyzed:	05/26/2015 10:19			**Analyzed:**	05/26/2015 14:28		
Units:	ug/L			**Units:**	ug/L		
Criteria:	± 50%			**Criteria:**	± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.122	0.100	122	0.107	0.100	107

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	6/1/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Batch Worklist

Batch: ELMS/ 1567 Created: 5/26/2015 09:32 Instrument: HBN: 149278

Rule: EPA 6850, Water Analyst: T. Bosch Status: WP

Workorder: 1513562
Workorder: 1513939
Workorder: 1513947
Workorder: 1514147

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	448328	CCV for HBN 149278 [ELMS/1567]				CCV	3		E6850..C3Q	5311		6/1/2015	
2	448329	RLVS for HBN 149278 [ELMS/1567				RLVS	3		E6850..C3Q	5311		6/1/2015	
3	448330	LODV for HBN 149278 [ELMS/1567				LODV	3		E6850..C3Q	5311		6/1/2015	
4	448331	ICS for HBN 149278 [ELMS/1567]				ICS	3		E6850..C3Q	5311		6/1/2015	
5	448332	LMB for HBN 149278 [ELMS/1567]				LMB	3		E6850...3Q	5311		6/1/2015	
6	448333	LCS for HBN 149278 [ELMS/1567]				LCS	3		E6850...3Q	5311		6/1/2015	
7	1513562001	2070699 008				SAMPLE	3	1513562001-A	E6850....3	5480	6/10/2015	6/1/2015	
8	448334	2070699 008(1513562001MS)				MS	3		E6850...3Q	5311		6/1/2015	
9	448335	2070699 008(1513562001MSD)				MSD	3		E6850...3Q	5311		6/1/2015	
10	1513562002	2070699 012				SAMPLE	3	1513562002-A	E6850....3	5480	6/10/2015	6/1/2015	
11	1513939001	2071034007(MRCMW109B051415)				SAMPLE	3	1513939001-A	E6850....3	5480	6/11/2015	6/3/2015	
12	1514147001	2071807004 (MRCMW109A051815)				SAMPLE	3	1514147001-A	E6850....3	5480	6/15/2015	6/5/2015	
13	1514147002	2071807005 (MRCMW90B051815)				SAMPLE	3	1514147002-A	E6850....3	5480	6/15/2015	6/5/2015	
14	1513947001	PRI5-019-SW01-051815-ES01				SAMPLE	3	1513947001-H	E6850....3	5480	6/15/2015	6/3/2015	
15	448336	CCV for HBN 149278 [ELMS/1567]				CCV	3		E6850..C3Q	5311		6/1/2015	
16	448337	LODV for HBN 149278 [ELMS/1567				LODV	3		E6850..C3Q	5311		6/1/2015	

ALS Work Order #'s & Sample #( )'s: 1513562 (001,02); 1513939 (001); 1514147 (001,02); 1513947 (001)
ELMS Batch/HBN ID: 1567 (149278)
Prep Date: 05/26/2015 Analysis Date: 05/26/2015 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence:\\HPCHEM\1\SEQUENCE\CLO4\2015\MAY\26MAY15P.s
Instrument MDL: **0.06µg/L** Reported PQL: **0.2µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 27894. Dilutions of Working Standard Solution ID 27896 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 08/14/2014, sequence 14AUG14P.s Offline Quantitation Method: CLO4OFF1.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89. Tuned: 8/14/2014 Tune Checked: 8/14/2014
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 1 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 85% Eluent A1; 15% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.52
4.0	0.52
5.0	0.25
14.5	0.25
15.0	0.52
17.5	0.52

QC DATA: 5.0µL of QC Solution Horizon ID 27897 was used for LCS 448333; Target = 5.0µg/L. ASTM type II water was used for LMB 448332.

MS/MSD: MS/MSD was performed on sample 1513562001 (Client ID: 2070699 008). 5.0µl of Working Standard Solution Horizon ID 27895 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. The ion ratio of m/z 83 to 85 often fails at levels near or below the Limit of Detection (LODV). The ion ratio failed for the LODV's-1,2 (448330/337).
3) Sample data can be viewed at two directories within the ALS system: \ALSLTWS013\DataReview\HBN# or throughNuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, many of the chromatographic peaks require manual integration. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 26MAYP-02/03/11/13/16.

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 Working Standard**

Standard: 27896
MFG: ALS/SLC
MFG Lot: TNB: 04/27/15
Part ID:

Created By: T. Bosch
Create Date: 04/27/2015
Lab Lot: CLO4 WRK

Amount: 10 mL
Expires: 01/31/2016
Usable: Yes

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
27895	CLO4 INT	6850 Intermediate Stock	CLO4 INT	0.1 mL	01/31/2016

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermediate Stock
Standard: 27895	**Created By:** T. Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/27/2015	**Expires:** 01/31/2016
MFG Lot: TNB: 4/27/15	**Lab Lot:** CLO4 INT	**Usable:** Yes
Part ID:		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
23120	CLO4 STOCK	6850 Stock Standard	CLO4 STOCK	0.1 mL	01/31/2016

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/6/2005	**Expires:** 11/7/2025	
MFG Lot:	**Lab Lot:** LAB 109	**Usable:** Yes	
Part ID:			

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK			Description - 6850 Stock Standard
Standard: 23120	**Created By:** T. Bosch		**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 4/4/2014		**Expires:** 1/31/2016
MFG Lot: 213025072-01	**Lab Lot:** CLO4 STOCK		**Usable:** Yes
Part ID: IC-PER-10X-1			

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuIon™ Reference Standard

Item Number: IC-PER-10X-1

Element: Perchlorate
Storage Condition: Ambient
Hazards: IRRITANT
Matrix: Water

Lot: 213025072-01
Date Certified: 1/24/2014
Expiration: Jan / 2016
Sample Size: 100 mL

[X] Included on ISO/IEC 17025 Scope of Accreditation
[X] Included on ISO Guide 34 Scope of Accreditation

Actual Lot Analysis

Perchlorate 1000 µg/mL

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentrations, the final solution was checked against material traceable to the following NIST SRMs: Ind. Std.

RESULTS: This solution standard was certified for accuracy of the listed components via methodology traceable to primary or well characterized secondary standards.

This standard was prepared gravimetrically to contain the concentrations shown above. Balances, used in the preparation, are calibrated regularly using NIST-traceable weights. All glassware used in preparation is Class A.

We use the highest purity raw materials available, ASTM type I 18 megohm deionized water, and typically 99.999%+ starting materials to minimize impurity levels in the final solution. All solutions are filtered through a 0.2 µm filter prior to being bottled. All bottles are triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ± 0.5% of the stated value until the expiration date listed above, provided it is kept tightly capped and stored under normal laboratory conditions.

L. Snyder

Lydia Snyder
Inorganic QC Supervisor

For use in routine laboratory analysis.

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC Working Standard
Standard: 27898	**Created By:** T. Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/27/2015	**Expires:** 04/27/2016
MFG Lot: TNB: 04/27/15	**Lab Lot:** CLO4 QC WRK 02/05/09	**Usable:** Yes
Part ID:		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
27897	CLO4 QC INT	6850 QC Intermediate Standard	CLO4 QC INT 02/05/09	0.1 mL	04/27/2016

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intermediate Standard

Standard: 27897	**Created By:** T. Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/27/2015	**Expires:** 04/27/2016
MFG Lot: TNB: 04/27/15	**Lab Lot:** CLO4 QC INT 02/05/09	**Usable:** Yes
Part ID:		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
23123	CLO4 QCSTOCK	6850 QC Stock Standard	CLO4 QC STOCK	0.1 mL	03/31/2017

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock Standard
Standard: 23123	**Created By:** T. Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 4/4/2014	**Expires:** 3/31/2017
MFG Lot: R00158	**Lab Lot:** CLO4 QC STOCK	**Usable:** Yes
Part ID: ICC-013		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ULTRAgrade™ Ion Chromatography Solution: 1000 µg/mL Perchlorate in low TOC water (< 50 ppb)
Catalog Number: ICC-013
Lot Number: R00158
Job Number: J00015917
Lot Issue Date: 02/22/2013
Expiration Date: 03/31/2017

Starting Material:	potassium perchlorate
Starting Material Purity:	99.9%
Starting Material Lot No.:	BH02444

Certified Value: 1001 ± 2 µg/mL

This Certified Reference Material (CRM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system. The analyte concentrations were verified by our ISO 17025 accredited laboratory to be within ± 2.5%, when compared to calibration standards independently prepared using NIST SRM(s). The certified value and uncertainty value at the 95% confidence level for each analyte is determined gravimetrically.

Confirmation by Ion Conductivity (IC) vs. second source (CRM)

Confirmation by Inductively Coupled Plasma Spectroscopy (ICP / ICP-MS) vs. NIST SRM 3141a

ULTRA uses purified acids, 18 megohm double deionized water, calibrated Class A glassware & meticulously cleaned bottles in the manufacturing of ULTRAgrade standards. Balances used in the manufacturing of this standard are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001.

ACCREDITED
ISO 17025:2005
Accredited
A2LA
Cert. No. 0851.01

ISO 9001:2000
Registered
TUV USA, Inc.
Cert. No. 06-1004

William J. Lea
Quality Assurance Manager

250 Smith Street, North Kingstown, RI 02852 USA
Ph: 401-294-9400 * Fax: 401-295-2330
www.ultrasci.com

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk
Standard: 27894	**Created By:** T. Bosch	**Amount:** 100 mL
MFG: ALS/SLC	**Create Date:** 04/27/2015	**Expires:** 04/27/2016
MFG Lot: TNB: 4/27/15	**Lab Lot:** CLO4ISTDWRK	**Usable:** Yes
Part ID:		

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: T. Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 4/4/2014	Expires: 2/27/2024
MFG Lot: SDDG-013	Lab Lot: CLO4ISTDSTK	Usable: Yes
Part ID: OLM-7310-S		

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

Cambridge Isotope Laboratories, Inc.

50 Frontage Road, Andover, MA 01810-5413 USA
800.322.1174 (N.AMERICA) 978.749.8000 (INTERNATIONAL)
www.isotope.com

CERTIFICATE OF ANALYSIS

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDDG-013

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

Quality Control Sample Batch Report

Analysis Information

Workorder(s): 1514147, 1513947, 1513939, 1513562

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** EPA 6850
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** ELMS/1567 (HBN: 149278)
	Prepared By: NA	**Analyzed By:** Thomas Bosch

EPA 6850 - Perchlorate

Confirmation by 83:85 Ratio					Internal Standard Peak Area Responses				
Lab ID	Mass 83	Mass 85	Ratio	Range	Peak Area	Target	%	Criteria	
448328-CCV	1409104	441644.7	3.19	2.3 - 3.8	180559.5	180559.5	100	50.0	150.0
448329-RLVS	9557.8	3884.1	2.46	2.3 - 3.8	187578.5	180559.5	104	50.0	150.0
448330-LODV	5338.8	2620.9	2.04	2.3 - 3.8	176857.3	180559.5	98.0	50.0	150.0
448331-ICS	41402.7	16472.4	2.51	2.3 - 3.8	159220.6	180559.5	88.2	50.0	150.0
448332-LMB	ND	ND	ND	2.3 - 3.8	179803.1	180559.5	99.6	50.0	150.0
448333-LCS	283821.4	97149.4	2.92	2.3 - 3.8	221079.9	180559.5	122	50.0	150.0
1513562001	ND	ND	ND	2.3 - 3.8	165931.5	180559.5	91.9	50.0	150.0
448334-MS	224208.2	77665.2	2.89	2.3 - 3.8	179000	180559.5	99.1	50.0	150.0
448335-MSD	224510.5	80011.7	2.81	2.3 - 3.8	190286.3	180559.5	105	50.0	150.0
1513562002	ND	ND	ND	2.3 - 3.8	122546.7	180559.5	67.9	50.0	150.0
1513939001	29115.9	11624.8	2.50	2.3 - 3.8	133070.8	180559.5	73.7	50.0	150.0
1514147001	ND	ND	ND	2.3 - 3.8	154446	180559.5	85.5	50.0	150.0
1514147002	23012.7	9860.2	2.33	2.3 - 3.8	148789.5	180559.5	82.4	50.0	150.0
1513947001	ND	ND	ND	2.3 - 3.8	108279.6	180559.5	60.0	50.0	150.0
448336-CCV	1193474.8	380324.1	3.14	2.3 - 3.8	156496.6	180559.5	86.7	50.0	150.0
448337-LODV	4282.2	2773.8	1.54	2.3 - 3.8	162245.4	180559.5	89.9	50.0	150.0

QC Data Approved and Reviewed by

Thomas Bosch

Analyst	Peer Review	Date

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
● - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Total Metals by 6020A Summary Forms

6020 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-033 **Method Type:** 6020 3015 **SOW No.:**

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2070699002	MRC-MW-07A-051215	
2070699005	MRC-MW-25A-051315	
2070699009	MRC-MW-42A-051315	
2070699010	MRC-MW-48A-051315	
2070699011	MRC-MW-24A-051315	
2070699012	MRC-MW-41A-051315	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:_____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: **Lisa Miller**

Date: _____ Title: **Metals Manager**

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1046	0.1000	105		90 - 110	M	5/18/2015	00:07	A051815 23
	Arsenic	0.1030	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
	Barium	0.1018	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Beryllium	0.1010	0.1000	101		90 - 110	M	5/18/2015	00:07	A051815 23
	Cadmium	0.1016	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Chromium	0.1035	0.1000	104		90 - 110	M	5/18/2015	00:07	A051815 23
	Cobalt	0.1031	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
	Copper	0.1025	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Lead	0.1018	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Manganese	0.1040	0.1000	104		90 - 110	M	5/18/2015	00:07	A051815 23
	Molybdenum	0.1023	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Nickel	0.0997	0.1000	100		90 - 110	M	5/18/2015	00:07	A051815 23
	Selenium	0.1010	0.1000	101		90 - 110	M	5/18/2015	00:07	A051815 23
	Silver	0.0995	0.1000	100		90 - 110	M	5/18/2015	00:07	A051815 23
	Thallium	0.0992	0.1000	99		90 - 110	M	5/18/2015	00:07	A051815 23
	Vanadium	0.1034	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/18/2015	00:14	A051815 23
	Barium	0.0051	0.0050	102		70 - 130	M	5/18/2015	00:14	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/18/2015	00:14	A051815 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/18/2015	00:14	A051815 23
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/18/2015	00:14	A051815 23
	Copper	0.0047	0.0050	94		70 - 130	M	5/18/2015	00:14	A051815 23
	Lead	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Manganese	0.0048	0.0050	96		70 - 130	M	5/18/2015	00:14	A051815 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/18/2015	00:14	A051815 23
	Selenium	0.0050	0.0050	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Silver	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	00:14	A051815 23
	Vanadium	0.0018	0.0020	90		70 - 130	M	5/18/2015	00:14	A051815 23

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1040	0.1000	104		90 - 110	M	5/18/2015	01:11	A051815 23
	Arsenic	0.1015	0.1000	102		90 - 110	M	5/18/2015	01:11	A051815 23
	Barium	0.0999	0.1000	100		90 - 110	M	5/18/2015	01:11	A051815 23
	Beryllium	0.0973	0.1000	97		90 - 110	M	5/18/2015	01:11	A051815 23
	Cadmium	0.1012	0.1000	101		90 - 110	M	5/18/2015	01:11	A051815 23
	Chromium	0.1025	0.1000	102		90 - 110	M	5/18/2015	01:11	A051815 23
	Cobalt	0.1024	0.1000	102		90 - 110	M	5/18/2015	01:11	A051815 23
	Copper	0.1031	0.1000	103		90 - 110	M	5/18/2015	01:11	A051815 23
	Lead	0.1042	0.1000	104		90 - 110	M	5/18/2015	01:11	A051815 23
	Manganese	0.1033	0.1000	103		90 - 110	M	5/18/2015	01:11	A051815 23
	Molybdenum	0.1004	0.1000	100		90 - 110	M	5/18/2015	01:11	A051815 23
	Nickel	0.0991	0.1000	99		90 - 110	M	5/18/2015	01:11	A051815 23
	Selenium	0.0993	0.1000	99		90 - 110	M	5/18/2015	01:11	A051815 23
	Silver	0.0986	0.1000	99		90 - 110	M	5/18/2015	01:11	A051815 23
	Thallium	0.0999	0.1000	100		90 - 110	M	5/18/2015	01:11	A051815 23
	Vanadium	0.1022	0.1000	102		90 - 110	M	5/18/2015	01:11	A051815 23
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/18/2015	01:18	A051815 23
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/18/2015	01:18	A051815 23
	Barium	0.0050	0.0050	100		70 - 130	M	5/18/2015	01:18	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	01:18	A051815 23
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/18/2015	01:18	A051815 23
	Chromium	0.0019	0.0020	95		70 - 130	M	5/18/2015	01:18	A051815 23
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/18/2015	01:18	A051815 23
	Copper	0.0047	0.0050	94		70 - 130	M	5/18/2015	01:18	A051815 23
	Lead	0.0019	0.0020	95		70 - 130	M	5/18/2015	01:18	A051815 23
	Manganese	0.0054	0.0050	108		70 - 130	M	5/18/2015	01:18	A051815 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/18/2015	01:18	A051815 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/18/2015	01:18	A051815 23
	Selenium	0.0051	0.0050	102		70 - 130	M	5/18/2015	01:18	A051815 23
	Silver	0.0018	0.0020	90		70 - 130	M	5/18/2015	01:18	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	01:18	A051815 23
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/18/2015	01:18	A051815 23

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1028	0.1000	103		90 - 110	M	5/18/2015	01:59	A051815 23
	Arsenic	0.1039	0.1000	104		90 - 110	M	5/18/2015	01:59	A051815 23
	Barium	0.0998	0.1000	100		90 - 110	M	5/18/2015	01:59	A051815 23
	Beryllium	0.0978	0.1000	98		90 - 110	M	5/18/2015	01:59	A051815 23
	Cadmium	0.0999	0.1000	100		90 - 110	M	5/18/2015	01:59	A051815 23
	Chromium	0.1029	0.1000	103		90 - 110	M	5/18/2015	01:59	A051815 23
	Cobalt	0.1027	0.1000	103		90 - 110	M	5/18/2015	01:59	A051815 23
	Copper	0.1031	0.1000	103		90 - 110	M	5/18/2015	01:59	A051815 23
	Lead	0.1055	0.1000	106		90 - 110	M	5/18/2015	01:59	A051815 23
	Manganese	0.1045	0.1000	104		90 - 110	M	5/18/2015	01:59	A051815 23
	Molybdenum	0.1013	0.1000	101		90 - 110	M	5/18/2015	01:59	A051815 23
	Nickel	0.0984	0.1000	98		90 - 110	M	5/18/2015	01:59	A051815 23
	Selenium	0.1039	0.1000	104		90 - 110	M	5/18/2015	01:59	A051815 23
	Silver	0.0985	0.1000	98		90 - 110	M	5/18/2015	01:59	A051815 23
	Thallium	0.1011	0.1000	101		90 - 110	M	5/18/2015	01:59	A051815 23
	Vanadium	0.1030	0.1000	103		90 - 110	M	5/18/2015	01:59	A051815 23
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:06	A051815 23
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/18/2015	02:06	A051815 23
	Barium	0.0049	0.0050	98		70 - 130	M	5/18/2015	02:06	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	02:06	A051815 23
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/18/2015	02:06	A051815 23
	Chromium	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:06	A051815 23
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/18/2015	02:06	A051815 23
	Copper	0.0048	0.0050	96		70 - 130	M	5/18/2015	02:06	A051815 23
	Lead	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:06	A051815 23
	Manganese	0.0048	0.0050	96		70 - 130	M	5/18/2015	02:06	A051815 23
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:06	A051815 23
	Nickel	0.0048	0.0050	96		70 - 130	M	5/18/2015	02:06	A051815 23
	Selenium	0.0046	0.0050	92		70 - 130	M	5/18/2015	02:06	A051815 23
	Silver	0.0018	0.0020	90		70 - 130	M	5/18/2015	02:06	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	02:06	A051815 23
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/18/2015	02:06	A051815 23

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1031	0.1000	103		90 - 110	M	5/18/2015	02:47	A051815 23
	Arsenic	0.1060	0.1000	106		90 - 110	M	5/18/2015	02:47	A051815 23
	Barium	0.1000	0.1000	100		90 - 110	M	5/18/2015	02:47	A051815 23
	Beryllium	0.0973	0.1000	97		90 - 110	M	5/18/2015	02:47	A051815 23
	Cadmium	0.0991	0.1000	99		90 - 110	M	5/18/2015	02:47	A051815 23
	Chromium	0.1023	0.1000	102		90 - 110	M	5/18/2015	02:47	A051815 23
	Cobalt	0.1012	0.1000	101		90 - 110	M	5/18/2015	02:47	A051815 23
	Copper	0.1022	0.1000	102		90 - 110	M	5/18/2015	02:47	A051815 23
	Lead	0.1025	0.1000	102		90 - 110	M	5/18/2015	02:47	A051815 23
	Manganese	0.1034	0.1000	103		90 - 110	M	5/18/2015	02:47	A051815 23
	Molybdenum	0.1006	0.1000	101		90 - 110	M	5/18/2015	02:47	A051815 23
	Nickel	0.0982	0.1000	98		90 - 110	M	5/18/2015	02:47	A051815 23
	Selenium	0.1051	0.1000	105		90 - 110	M	5/18/2015	02:47	A051815 23
	Silver	0.0981	0.1000	98		90 - 110	M	5/18/2015	02:47	A051815 23
	Thallium	0.0993	0.1000	99		90 - 110	M	5/18/2015	02:47	A051815 23
	Vanadium	0.1025	0.1000	102		90 - 110	M	5/18/2015	02:47	A051815 23
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:54	A051815 23
	Arsenic	0.0034	0.0030	113		70 - 130	M	5/18/2015	02:54	A051815 23
	Barium	0.0049	0.0050	98		70 - 130	M	5/18/2015	02:54	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	02:54	A051815 23
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/18/2015	02:54	A051815 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/18/2015	02:54	A051815 23
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/18/2015	02:54	A051815 23
	Copper	0.0047	0.0050	94		70 - 130	M	5/18/2015	02:54	A051815 23
	Lead	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:54	A051815 23
	Manganese	0.0050	0.0050	100		70 - 130	M	5/18/2015	02:54	A051815 23
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:54	A051815 23
	Nickel	0.0047	0.0050	94		70 - 130	M	5/18/2015	02:54	A051815 23
	Selenium	0.0049	0.0050	98		70 - 130	M	5/18/2015	02:54	A051815 23
	Silver	0.0019	0.0020	95		70 - 130	M	5/18/2015	02:54	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	02:54	A051815 23
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/18/2015	02:54	A051815 23

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	00:10	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	00:10	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	00:10	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	00:10	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	01:14	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	01:14	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	01:14	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	01:14	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	01:14	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	01:14	A051815 2341 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	02:02	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	02:02	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	02:02	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:02	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	02:02	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:02	A051815 2341 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	02:51	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	02:51	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	02:51	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	02:51	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	02:51	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	02:51	A051815 2341 (

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2177674			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	00:33	A051815 2341 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/18/2015	00:33	A051815 2341 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/18/2015	00:33	A051815 2341 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/18/2015	00:33	A051815 2341 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	00:33	A051815 2341 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	00:33	A051815 2341 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Molybdenum	0.00082	J		0.0022	0.00067	0.00222	M	5/18/2015	00:33	A051815 2341 (
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	00:33	A051815 2341 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	00:33	A051815 2341 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/18/2015	00:33	A051815 2341 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	00:33	A051815 2341 (

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Arsenic	0.0002				-0.00300 - -0.00300	5/18/2015	00:18	A051815 2341
	Barium	0.0004				-0.01000 - -0.01000	5/18/2015	00:18	A051815 2341
	Beryllium	0.00002				-0.001000 - -0.001000	5/18/2015	00:18	A051815 2341
	Cadmium	0.0008				-0.00100 - -0.00100	5/18/2015	00:18	A051815 2341
	Chromium	0.0006				-0.00400 - -0.00400	5/18/2015	00:18	A051815 2341
	Cobalt	0.0006				-0.00600 - -0.00600	5/18/2015	00:18	A051815 2341
	Copper	0.0015				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Lead	0.0001				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Manganese	0.0012				-0.01000 - -0.01000	5/18/2015	00:18	A051815 2341
	Molybdenum	1.9973	2.00000	100		80 - 120%	5/18/2015	00:18	A051815 2341
	Nickel	0.0006				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Selenium	0.0000				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Silver	0.0004				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Thallium	0.00002				-0.001000 - -0.001000	5/18/2015	00:18	A051815 2341
	Vanadium	0.0001				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	5/18/2015	00:22	A051815 2341
	Arsenic	0.0200	0.02000	100		80 - 120%	5/18/2015	00:22	A051815 2341
	Barium	0.0003				-0.00500 - -0.00500	5/18/2015	00:22	A051815 2341
	Beryllium	0.00003				-0.001000 - -0.001000	5/18/2015	00:22	A051815 2341
	Cadmium	0.0097	0.01000	97		80 - 120%	5/18/2015	00:22	A051815 2341
	Chromium	0.0189	0.02000	94		80 - 120%	5/18/2015	00:22	A051815 2341
	Cobalt	0.0379	0.04000	95		80 - 120%	5/18/2015	00:22	A051815 2341
	Copper	0.0189	0.02000	94		80 - 120%	5/18/2015	00:22	A051815 2341
	Lead	0.0002				-0.00200 - -0.00200	5/18/2015	00:22	A051815 2341
	Manganese	0.0196	0.02000	98		80 - 120%	5/18/2015	00:22	A051815 2341
	Molybdenum	2.0373	2.00000	102		80 - 120%	5/18/2015	00:22	A051815 2341
	Nickel	0.0356	0.04000	89		80 - 120%	5/18/2015	00:22	A051815 2341
	Selenium	0.0194	0.02000	97		80 - 120%	5/18/2015	00:22	A051815 2341
	Silver	0.0176	0.02000	88		80 - 120%	5/18/2015	00:22	A051815 2341
	Thallium	0.00002				-0.001000 - -0.001000	5/18/2015	00:22	A051815 2341
	Vanadium	0.0401	0.04000	100		80 - 120%	5/18/2015	00:22	A051815 2341

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2177675									
	Antimony	mg/L	0.2220	0.2189		99		80 - 120	M
	Arsenic	mg/L	0.2220	0.2154		97		80 - 120	M
	Barium	mg/L	2.2220	2.3850		107		80 - 120	M
	Beryllium	mg/L	0.2220	0.1968		89		80 - 120	M
	Cadmium	mg/L	0.2220	0.2289		103		80 - 120	M
	Chromium	mg/L	0.2220	0.2235		101		80 - 120	M
	Cobalt	mg/L	0.2220	0.2238		101		80 - 120	M
	Copper	mg/L	0.2220	0.2208		99		80 - 120	M
	Lead	mg/L	0.2220	0.2302		104		80 - 120	M
	Manganese	mg/L	0.2220	0.2289		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2208		99		80 - 120	M
	Nickel	mg/L	0.2220	0.2284		103		80 - 120	M
	Selenium	mg/L	0.2220	0.2013		91		80 - 120	M
	Silver	mg/L	0.1110	0.1115		100		80 - 120	M
	Thallium	mg/L	0.2220	0.2139		96		80 - 120	M
	Vanadium	mg/L	0.2220	0.2224		100		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-033
Contract: TMM033|112IL06247 **Lab Code:** CAS
Method: MS
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72978						
2177674	MB for HBN 72978 [MDIG/50838	MB	QC-WAT	5/17/15	45.0	50.0	
2177675	LCS for HBN 72978 [MDIG/50838	LCS	QC-WAT	5/17/15	45.0	50.0	
2070699002	MRC-MW-07A-051215	SAM	WATER	5/17/15	45.0	50.0	
2070699005	MRC-MW-25A-051315	SAM	WATER	5/17/15	45.0	50.0	
2070699009	MRC-MW-42A-051315	SAM	WATER	5/17/15	45.0	50.0	
2070699010	MRC-MW-48A-051315	SAM	WATER	5/17/15	45.0	50.0	
2070699011	MRC-MW-24A-051315	SAM	WATER	5/17/15	45.0	50.0	
2070699012	MRC-MW-41A-051315	SAM	WATER	5/17/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2341																										
BLK	1.00	2344			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2348			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2352			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2359			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0003			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0007			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0010			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0014			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0018			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0025																										
ZZZZZZ	1.00	0029																										
2177674	1.00	0033			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2177675	1.00	0037			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2070699002	1.00	0040			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2070699005	1.00	0044			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2070699009	1.00	0048			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2070699010	1.00	0052			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2070699011	1.00	0055			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
2070699012	1.00	0059			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	0103																										
ZZZZZZ	5.00	0107																										
CCV1	1.00	0111			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	0114			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0118			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0122																										
ZZZZZZ	1.00	0125																										
ZZZZZZ	1.00	0129																										
ZZZZZZ	1.00	0133																										
ZZZZZZ	1.00	0136																										
ZZZZZZ	1.00	0140																										
ZZZZZZ	1.00	0144																										
ZZZZZZ	1.00	0148																										
ZZZZZZ	5.00	0151																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0155																										
CCV2	1.00	0159			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	0202			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0206			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0210																										
ZZZZZZ	1.00	0213																										
ZZZZZZ	1.00	0217																										
ZZZZZZ	1.00	0221																										
ZZZZZZ	1.00	0225																										
ZZZZZZ	1.00	0228																										
2070699010	5.00	0232														X												
2070699011	5.00	0236																										
2070699012	5.00	0240														X												
ZZZZZZ	1.00	0243																										
CCV3	1.00	0247			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	0251			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	0254			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	0258																										
ZZZZZZ	5.00	0302																										
ZZZZZZ	5.00	0306																										
ZZZZZZ	5.00	0309																										
ZZZZZZ	5.00	0313																										
ZZZZZZ	25.00	0317																										
ZZZZZZ	5.00	0320																										
ZZZZZZ	5.00	0324																										
ZZZZZZ	5.00	0328																										
ZZZZZZ	5.00	0332																										
ZZZZZZ	1.00	0336																										
ZZZZZZ	1.00	0340																										
ZZZZZZ	1.00	0343																										
ZZZZZZ	5.00	0347																										
ZZZZZZ	5.00	0351																										
ZZZZZZ	5.00	0355																										
ZZZZZZ	5.00	0358																										
ZZZZZZ	5.00	0402																										
ZZZZZZ	5.00	0406																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0410																								
ZZZZZZ	5.00	0414																								
ZZZZZZ	5.00	0417																								
ZZZZZZ	5.00	0421																								
ZZZZZZ	1.00	0425																								
ZZZZZZ	1.00	0429																								
ZZZZZZ	1.00	0432																								
ZZZZZZ	25.00	0436																								
ZZZZZZ	5.00	0440																								
ZZZZZZ	5.00	0443																								
ZZZZZZ	5.00	0447																								
ZZZZZZ	5.00	0451																								
ZZZZZZ	5.00	0455																								
ZZZZZZ	5.00	0458																								
ZZZZZZ	5.00	0502																								
ZZZZZZ	5.00	0506																								
ZZZZZZ	5.00	0510																								
ZZZZZZ	1.00	0514																								
ZZZZZZ	1.00	0518																								
ZZZZZZ	1.00	0521																								
ZZZZZZ	5.00	0525																								
ZZZZZZ	5.00	0529																								
ZZZZZZ	5.00	0533																								
ZZZZZZ	1.00	0536																								
ZZZZZZ	1.00	0540																								
ZZZZZZ	1.00	0544																								
ZZZZZZ	1.00	0804																								
ZZZZZZ	1.00	0808																								
ZZZZZZ	1.00	0812																								
ZZZZZZ	1.00	0817																								
ZZZZZZ	1.00	0820																								
ZZZZZZ	5.00	0828																								
ZZZZZZ	5.00	0831																								
ZZZZZZ	5.00	0835																								
ZZZZZZ	5.00	0839																								
ZZZZZZ	5.00	0843																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0847																								
ZZZZZZ	5.00	0850																								
ZZZZZZ	5.00	0854																								
ZZZZZZ	5.00	0858																								
ZZZZZZ	5.00	0902																								
ZZZZZZ	1.00	0906																								
ZZZZZZ	1.00	0910																								
ZZZZZZ	1.00	0913																								
ZZZZZZ	5.00	0917																								
ZZZZZZ	5.00	0921																								
ZZZZZZ	50.00	0925																								
ZZZZZZ	50.00	0929																								
ZZZZZZ	50.00	0932																								
ZZZZZZ	50.00	0936																								
ZZZZZZ	500.00	0940																								
ZZZZZZ	1.00	0944																								
ZZZZZZ	1.00	0948																								
ZZZZZZ	1.00	0951																								
ZZZZZZ	1.00	0955																								
ZZZZZZ	1.00	0959																								
ZZZZZZ	1.00	1002																								
ZZZZZZ	5.00	1007																								
ZZZZZZ	5.00	1011																								
ZZZZZZ	5.00	1015																								
ZZZZZZ	5.00	1019																								
ZZZZZZ	5.00	1022																								
ZZZZZZ	5.00	1026																								
ZZZZZZ	1.00	1030																								
ZZZZZZ	1.00	1034																								
ZZZZZZ	1.00	1037																								
ZZZZZZ	1.00	1041																								
ZZZZZZ	1.00	1045																								
ZZZZZZ	5.00	1143																								
ZZZZZZ	5.00	1147																								
ZZZZZZ	5.00	1150																								
ZZZZZZ	5.00	1154																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1158																								
ZZZZZZ	5.00	1202																								
ZZZZZZ	5.00	1205																								
ZZZZZZ	5.00	1209																								
ZZZZZZ	5.00	1213																								
ZZZZZZ	5.00	1217																								
ZZZZZZ	1.00	1221																								
ZZZZZZ	1.00	1224																								
ZZZZZZ	1.00	1228																								
ZZZZZZ	5.00	1232																								
ZZZZZZ	5.00	1236																								
ZZZZZZ	5.00	1239																								
ZZZZZZ	5.00	1243																								
ZZZZZZ	5.00	1247																								
ZZZZZZ	5.00	1251																								
ZZZZZZ	5.00	1255																								
ZZZZZZ	5.00	1259																								
ZZZZZZ	5.00	1303																								
ZZZZZZ	5.00	1307																								
ZZZZZZ	1.00	1310																								
ZZZZZZ	1.00	1314																								
ZZZZZZ	1.00	1318																								
ZZZZZZ	5.00	1322																								
ZZZZZZ	50.00	1325																								
ZZZZZZ	1.00	1329																								
ZZZZZZ	1.00	1333																								
ZZZZZZ	1.00	1337																								
ZZZZZZ	1.00	1359																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1406																								
ZZZZZZ	1.00	1410																								
ZZZZZZ	1.00	1414																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1421																								
ZZZZZZ	1.00	1425																								
ZZZZZZ	1.00	1429																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1432																								
ZZZZZZ	1.00	1436																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1447																								
ZZZZZZ	1.00	1451																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1458																								
ZZZZZZ	1.00	1502																								
ZZZZZZ	1.00	1506																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1513																								
ZZZZZZ	1.00	1517																								
ZZZZZZ	1.00	1521																								
ZZZZZZ	1.00	1524																								
ZZZZZZ	1.00	1528																								
ZZZZZZ	1.00	1532																								
ZZZZZZ	1.00	1536																								
ZZZZZZ	5.00	1539																								
ZZZZZZ	1.00	1543																								
ZZZZZZ	1.00	1547																								
ZZZZZZ	1.00	1550																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1558																								
ZZZZZZ	1.00	1602																								
ZZZZZZ	1.00	1605																								
ZZZZZZ	1.00	1609																								
ZZZZZZ	1.00	1613																								

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2341												
BLK	BLK	2344	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2348	99		99		100		99		99		101	
STANDARD 2	STANDARD 2	2352	99		98		100		100		99		100	
STANDARD 3	STANDARD 3	2356	99		98		100		100		100		102	
STANDARD 4	STANDARD 4	2359	99		98		101		101		100		101	
STANDARD 5	STANDARD 5	0003	99		98		100		101		98		101	
ICV	ICV	0007	102		101		103		104		105		106	
ICB1	ICB	0010	99		98		100		99		98		100	
LLICV	LLICV	0014	99		96		100		100		99		101	
ICS-A1	ICSA	0018	88		96		94		98		100		100	
ICS-AB1	ICSAB	0022	91		96		96		99		99		102	
CHECK	ZZZZZZ	0025												
CHECK	ZZZZZZ	0029												
2177674	MB for HBN 72978	0033	101		117		94		91		90		99	
2177675	LCS for HBN 7297	0037	102		128		101		98		93		100	
2070699002	MRC-MW-07A-05121	0040	89		122		95		97		92		100	
2070699005	MRC-MW-25A-05131	0044	93		124		96		96		90		100	
2070699009	MRC-MW-42A-05131	0048	87		128		93		98		93		100	
2070699010	MRC-MW-48A-05131	0052	96		124		100		101		92		104	
2070699011	MRC-MW-24A-05131	0055	93		120		98		99		93		101	
2070699012	MRC-MW-41A-05131	0059	89		116		95		99		94		103	
2070384001	ZZZZZZ	0103												
2070384001L	ZZZZZZ	0107												
CCV1	CCV	0111	105		101		107		105		98		105	
CCB1	CCB	0114	103		100		104		102		98		105	
LLCCV	LLCCV	0118	105		102		107		105		98		104	
2070384001P	ZZZZZZ	0122												
2070384002	ZZZZZZ	0125												
2070384003	ZZZZZZ	0129												
2070384003S	ZZZZZZ	0133												
2070384003S	ZZZZZZ	0136												
2070384004	ZZZZZZ	0140												
2070384006	ZZZZZZ	0144												
2070651001	ZZZZZZ	0148												
2070651001L	ZZZZZZ	0151												
2070651001P	ZZZZZZ	0155												
CCV2	CCV	0159	106		102		108		105		96		101	
CCB2	CCB	0202	102		97		103		101		93		99	
LLCCV	LLCCV	0206	103		98		104		101		96		102	
2070651002	ZZZZZZ	0210												
2070651003	ZZZZZZ	0213												
2070651004	ZZZZZZ	0217												
2070651005	ZZZZZZ	0221												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070651006	ZZZZZZ	0225												
2070651007	ZZZZZZ	0228												
2070699010	MRC-MW-48A-05131	0232	101		99		103		100		89		100	
2070699011	MRC-MW-24A-05131	0236	99		95		100		98		91		97	
2070699012	MRC-MW-41A-05131	0240	98		98		100		100		91		100	
CHECK	ZZZZZZ	0243												
CCV3	CCV	0247	106		100		106		103		95		100	
CCB3	CCB	0251	105		99		105		102		94		100	
LLCCV	LLCCV	0254	104		99		105		102		94		102	
2178845	ZZZZZZ	0258												
2178847	ZZZZZZ	0302												
2178852	ZZZZZZ	0306												
2178854	ZZZZZZ	0309												
2070681008	ZZZZZZ	0313												
2070681008L	ZZZZZZ	0317												
2070681008P	ZZZZZZ	0320												
2070681009	ZZZZZZ	0324												
2070681010	ZZZZZZ	0328												
2070759001	ZZZZZZ	0332												
CCV4	ZZZZZZ	0336												
CCB4	ZZZZZZ	0340												
LLCCV	ZZZZZZ	0343												
2069415001	ZZZZZZ	0347												
2178848	ZZZZZZ	0351												
2178849	ZZZZZZ	0355												
2069415001P	ZZZZZZ	0358												
2069415003	ZZZZZZ	0402												
2070695001	ZZZZZZ	0406												
2070695002	ZZZZZZ	0410												
2178847	ZZZZZZ	0414												
2178854	ZZZZZZ	0417												
2070937004	ZZZZZZ	0421												
CCV5	ZZZZZZ	0425												
CCB5	ZZZZZZ	0429												
LLCCV	ZZZZZZ	0432												
2070937004L	ZZZZZZ	0436												
2070937004P	ZZZZZZ	0440												
2070937005	ZZZZZZ	0443												
2070937019	ZZZZZZ	0447												
2070987001	ZZZZZZ	0451												
2070944001	ZZZZZZ	0455												
2070945001	ZZZZZZ	0458												
2178855	ZZZZZZ	0502												
2178856	ZZZZZZ	0506												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070945001P	ZZZZZZ	0510												
CCV6	ZZZZZZ	0514												
CCB6	ZZZZZZ	0518												
LLCCV	ZZZZZZ	0521												
2071312001	ZZZZZZ	0525												
2071315001	ZZZZZZ	0529												
2071316001	ZZZZZZ	0533												
CCV7	ZZZZZZ	0536												
CCB7	ZZZZZZ	0540												
LLCCV	ZZZZZZ	0544												
CHECK	ZZZZZZ	0804												
CHECK	ZZZZZZ	0808												
CCV8	ZZZZZZ	0812												
CCB8	ZZZZZZ	0817												
LLCCV	ZZZZZZ	0820												
2178535	ZZZZZZ	0828												
2178536	ZZZZZZ	0831												
2071244001	ZZZZZZ	0835												
2071244002	ZZZZZZ	0839												
2071244003	ZZZZZZ	0843												
2071279001	ZZZZZZ	0847												
2071280001	ZZZZZZ	0850												
2071281001	ZZZZZZ	0854												
2071282001	ZZZZZZ	0858												
2071247001	ZZZZZZ	0902												
CCV9	ZZZZZZ	0906												
CCB9	ZZZZZZ	0910												
LLCCV	ZZZZZZ	0913												
2071246001	ZZZZZZ	0917												
2071276001	ZZZZZZ	0921												
2071278001	ZZZZZZ	0925												
2178537	ZZZZZZ	0929												
2178538	ZZZZZZ	0932												
2071278001P	ZZZZZZ	0936												
2071278001	ZZZZZZ	0940												
CHECK	ZZZZZZ	0944												
CHECK	ZZZZZZ	0948												
CHECK	ZZZZZZ	0951												
CCV10	ZZZZZZ	0955												
CCB10	ZZZZZZ	0959												
LLCCV	ZZZZZZ	1002												
2178535	ZZZZZZ	1007												
2178536	ZZZZZZ	1011												
2071279001	ZZZZZZ	1015												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2071280001	ZZZZZZ	1019												
2071281001	ZZZZZZ	1022												
2071282001	ZZZZZZ	1026												
CHECK	ZZZZZZ	1030												
CHECK	ZZZZZZ	1034												
CCV11	ZZZZZZ	1037												
CCB11	ZZZZZZ	1041												
LLCCV	ZZZZZZ	1045												
2178859	ZZZZZZ	1143												
2178861	ZZZZZZ	1147												
2070681011	ZZZZZZ	1150												
2178862	ZZZZZZ	1154												
2178863	ZZZZZZ	1158												
2070681011P	ZZZZZZ	1202												
2070681012	ZZZZZZ	1205												
2070681012L	ZZZZZZ	1209												
2070681012P	ZZZZZZ	1213												
2070681013	ZZZZZZ	1217												
CCV12	ZZZZZZ	1221												
CCB12	ZZZZZZ	1224												
LLCCV	ZZZZZZ	1228												
2071314001	ZZZZZZ	1232												
2070903001	ZZZZZZ	1236												
2070941002	ZZZZZZ	1239												
2070941004	ZZZZZZ	1243												
2070941006	ZZZZZZ	1247												
2070941008	ZZZZZZ	1251												
2070941010	ZZZZZZ	1255												
2070941012	ZZZZZZ	1259												
2070941014	ZZZZZZ	1303												
2070941016	ZZZZZZ	1307												
CCV13	ZZZZZZ	1310												
CCB13	ZZZZZZ	1314												
LLCCV	ZZZZZZ	1318												
2070941018	ZZZZZZ	1322												
2070941004	ZZZZZZ	1325												
CCV14	ZZZZZZ	1329												
CCB14	ZZZZZZ	1333												
LLCCV	ZZZZZZ	1337												
2179129	ZZZZZZ	1359												
2179130	ZZZZZZ	1403												
2179133	ZZZZZZ	1406												
2179134	ZZZZZZ	1410												
2070681014	ZZZZZZ	1414												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070940001	ZZZZZZ	1418												
2179131	ZZZZZZ	1421												
2179132	ZZZZZZ	1425												
2070940003	ZZZZZZ	1429												
2070940003L	ZZZZZZ	1432												
CCV15	ZZZZZZ	1436												
CCB15	ZZZZZZ	1440												
LLCCV	ZZZZZZ	1444												
2070940004	ZZZZZZ	1447												
2070940005	ZZZZZZ	1451												
2070940006	ZZZZZZ	1455												
2070940007	ZZZZZZ	1458												
2070940008	ZZZZZZ	1502												
2070940009	ZZZZZZ	1506												
2071227001	ZZZZZZ	1510												
2179135	ZZZZZZ	1513												
2179136	ZZZZZZ	1517												
2071227003	ZZZZZZ	1521												
CCV16	ZZZZZZ	1524												
CCB16	ZZZZZZ	1528												
LLCCV	ZZZZZZ	1532												
2071227002	ZZZZZZ	1536												
2071227002L	ZZZZZZ	1539												
2071227004	ZZZZZZ	1543												
2071227006	ZZZZZZ	1547												
2071227007	ZZZZZZ	1550												
2071227008	ZZZZZZ	1554												
2071227009	ZZZZZZ	1558												
2071227010	ZZZZZZ	1602												
CCV17	ZZZZZZ	1605												
CCB17	ZZZZZZ	1609												
LLCCV	ZZZZZZ	1613												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2341												
BLK	2344	100											
STANDARD 1	2348	100											
STANDARD 2	2352	100											
STANDARD 3	2356	100											
STANDARD 4	2359	100											
STANDARD 5	0003	101											
ICV	0007	104											
ICB	0010	100											
LLICV	0014	100											
ICSA	0018	100											
ICSAB	0022	101											
ZZZZZZ	0025												
ZZZZZZ	0029												
MB for HBN 72978	0033	94											
LCS for HBN 7297	0037	102											
MRC-MW-07A-05121	0040	99											
MRC-MW-25A-05131	0044	100											
MRC-MW-42A-05131	0048	102											
MRC-MW-48A-05131	0052	104											
MRC-MW-24A-05131	0055	106											
MRC-MW-41A-05131	0059	100											
ZZZZZZ	0103												
ZZZZZZ	0107												
CCV	0111	108											
CCB	0114	106											
LLCCV	0118	107											
ZZZZZZ	0122												
ZZZZZZ	0125												
ZZZZZZ	0129												
ZZZZZZ	0133												
ZZZZZZ	0136												
ZZZZZZ	0140												
ZZZZZZ	0144												
ZZZZZZ	0148												
ZZZZZZ	0151												
ZZZZZZ	0155												
CCV	0159	108											
CCB	0202	104											
LLCCV	0206	105											
ZZZZZZ	0210												
ZZZZZZ	0213												
ZZZZZZ	0217												
ZZZZZZ	0221												
ZZZZZZ	0225												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0228												
MRC-MW-48A-05131	0232	105											
MRC-MW-24A-05131	0236	104											
MRC-MW-41A-05131	0240	104											
ZZZZZZ	0243												
CCV	0247	107											
CCB	0251	107											
LLCCV	0254	106											
ZZZZZZ	0258												
ZZZZZZ	0302												
ZZZZZZ	0306												
ZZZZZZ	0309												
ZZZZZZ	0313												
ZZZZZZ	0317												
ZZZZZZ	0320												
ZZZZZZ	0324												
ZZZZZZ	0328												
ZZZZZZ	0332												
ZZZZZZ	0336												
ZZZZZZ	0340												
ZZZZZZ	0343												
ZZZZZZ	0347												
ZZZZZZ	0351												
ZZZZZZ	0355												
ZZZZZZ	0358												
ZZZZZZ	0402												
ZZZZZZ	0406												
ZZZZZZ	0410												
ZZZZZZ	0414												
ZZZZZZ	0417												
ZZZZZZ	0421												
ZZZZZZ	0425												
ZZZZZZ	0429												
ZZZZZZ	0432												
ZZZZZZ	0436												
ZZZZZZ	0440												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0451												
ZZZZZZ	0455												
ZZZZZZ	0458												
ZZZZZZ	0502												
ZZZZZZ	0506												
ZZZZZZ	0510												
ZZZZZZ	0514												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0518												
ZZZZZZ	0521												
ZZZZZZ	0525												
ZZZZZZ	0529												
ZZZZZZ	0533												
ZZZZZZ	0536												
ZZZZZZ	0540												
ZZZZZZ	0544												
ZZZZZZ	0804												
ZZZZZZ	0808												
ZZZZZZ	0812												
ZZZZZZ	0817												
ZZZZZZ	0820												
ZZZZZZ	0828												
ZZZZZZ	0831												
ZZZZZZ	0835												
ZZZZZZ	0839												
ZZZZZZ	0843												
ZZZZZZ	0847												
ZZZZZZ	0850												
ZZZZZZ	0854												
ZZZZZZ	0858												
ZZZZZZ	0902												
ZZZZZZ	0906												
ZZZZZZ	0910												
ZZZZZZ	0913												
ZZZZZZ	0917												
ZZZZZZ	0921												
ZZZZZZ	0925												
ZZZZZZ	0929												
ZZZZZZ	0932												
ZZZZZZ	0936												
ZZZZZZ	0940												
ZZZZZZ	0944												
ZZZZZZ	0948												
ZZZZZZ	0951												
ZZZZZZ	0955												
ZZZZZZ	0959												
ZZZZZZ	1002												
ZZZZZZ	1007												
ZZZZZZ	1011												
ZZZZZZ	1015												
ZZZZZZ	1019												
ZZZZZZ	1022												
ZZZZZZ	1026												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1030												
ZZZZZZ	1034												
ZZZZZZ	1037												
ZZZZZZ	1041												
ZZZZZZ	1045												
ZZZZZZ	1143												
ZZZZZZ	1147												
ZZZZZZ	1150												
ZZZZZZ	1154												
ZZZZZZ	1158												
ZZZZZZ	1202												
ZZZZZZ	1205												
ZZZZZZ	1209												
ZZZZZZ	1213												
ZZZZZZ	1217												
ZZZZZZ	1221												
ZZZZZZ	1224												
ZZZZZZ	1228												
ZZZZZZ	1232												
ZZZZZZ	1236												
ZZZZZZ	1239												
ZZZZZZ	1243												
ZZZZZZ	1247												
ZZZZZZ	1251												
ZZZZZZ	1255												
ZZZZZZ	1259												
ZZZZZZ	1303												
ZZZZZZ	1307												
ZZZZZZ	1310												
ZZZZZZ	1314												
ZZZZZZ	1318												
ZZZZZZ	1322												
ZZZZZZ	1325												
ZZZZZZ	1329												
ZZZZZZ	1333												
ZZZZZZ	1337												
ZZZZZZ	1359												
ZZZZZZ	1403												
ZZZZZZ	1406												
ZZZZZZ	1410												
ZZZZZZ	1414												
ZZZZZZ	1418												
ZZZZZZ	1421												
ZZZZZZ	1425												
ZZZZZZ	1429												

6020 3015

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-033

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1432												
ZZZZZZ	1436												
ZZZZZZ	1440												
ZZZZZZ	1444												
ZZZZZZ	1447												
ZZZZZZ	1451												
ZZZZZZ	1455												
ZZZZZZ	1458												
ZZZZZZ	1502												
ZZZZZZ	1506												
ZZZZZZ	1510												
ZZZZZZ	1513												
ZZZZZZ	1517												
ZZZZZZ	1521												
ZZZZZZ	1524												
ZZZZZZ	1528												
ZZZZZZ	1532												
ZZZZZZ	1536												
ZZZZZZ	1539												
ZZZZZZ	1543												
ZZZZZZ	1547												
ZZZZZZ	1550												
ZZZZZZ	1554												
ZZZZZZ	1558												
ZZZZZZ	1602												
ZZZZZZ	1605												
ZZZZZZ	1609												
ZZZZZZ	1613												

Sample Report

Sample Table

Sample Name	2070699009
Data File Name	019SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\A051815.b
Acq Date Time	2015-05-18T00:48:12-04:00
Sample Type	Sample
Dilution	1
Comment	48392 ZMC
ISTD Ref FileName	002CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail
Vial	3105

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
V	51	1	No Gas	0.366	0.366	41.37	18839	0.00	1000	
Cr	52	1	No Gas	1.722	1.722	2.53	79203	0.00	1000	
Mn	55	1	No Gas	5535.615	5535.615	0.82	246424924	0.00	8000	
Co	59	1	No Gas	282.173	282.173	0.28	10647413	0.00	1000	
Ni	60	1	No Gas	348.380	348.380	0.39	2853065	0.01	1000	
Cu	63	1	No Gas	7.980	7.980	1.00	166685	0.00	5000	
Sr	88	1	No Gas	167.310	167.310	1.89	9911231	0.00	1000	
Ag	107	1	No Gas	0.684	0.684	1.93	16931	0.00	1000	
Al	27	1	No Gas	175.398	175.398	3.94	4465857	0.00	90000	
Sn	118	1	No Gas	0.224	0.224	7.32	5208	0.00	1000	
Ti	47	1	No Gas	1.614	1.614	40.49	4889	0.03	2000	
Zn	66	1	No Gas	192.045	192.045	0.99	919354	0.02	5000	
As	75	3	HEHe	4.518	4.518	1.35	1619	0.28	1000	
As	75	1	No Gas	1.723	1.723	19.07	38320	0.00	1000	
Sb	121	1	No Gas	0.038	0.038	9.84	1840	0.00	1000	
Hg	201	1	No Gas	0.019	0.019	32.49	70	0.03	4	
Be	9	1	No Gas	11.947	11.947	0.56	57107	0.02	1000	
Pb	208	1	No Gas	0.524	0.524	2.82	25083	0.00	1000	
Se	82	1	No Gas	2.542	2.542	24.83	1011	0.25	1000	
Mo	98	1	No Gas	0.193	0.193	8.93	3223	0.01	3000	
Ba	137	1	No Gas	683.492	683.492	1.25	5125053	0.01	1000	
Tl	205	1	No Gas	0.046	0.046	13.23	1826	0.00	1000	
U	238	1	No Gas	0.070	0.070	9.52	3571	0.00	1000	
Na	23	2	He	624005.969	624005.969	1.95	148394281	0.42	90000	>LDR
Mg	24	2	He	36515.719	36515.719	1.41	3888581	0.94	90000	
K	39	2	He	3450.725	3450.725	2.22	195972	1.76	90000	
Se	82	3	HEHe	23.845	23.845	5.49	565	4.22	1000	
Cd	114	1	No Gas	0.051	0.051	14.65	550	0.01	1000	
Ca	44	1	No Gas	17931.392	17931.392	0.99	17863593	0.10	90000	
B	11	1	No Gas	25.658	25.658	2.87	64154	0.04	2000	
Fe	56	3	HEHe	120470.164	120470.164	1.69	529281192	0.02	90000	>LDR
Kr	84	1	No Gas	1664.098	1664.098	1.78	60416	2.75	100000	
Se	78	3	HEHe	12.093	12.093	3.33	549	2.20	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Sc	45	1	No Gas	5674808	0.68	5803627	97.78	70	120	
Sc	45	2	He	49289	1.65	53110	92.81	70	120	
Ge	72	1	No Gas	912415	2.35	714545	127.69	70	120	ISTD Failed
In	115	1	No Gas	3876902	0.37	4158566	93.23	70	120	
Tb	159	1	No Gas	5843759	0.19	5725405	102.07	70	120	
Bi	209	1	No Gas	2869316	0.96	3296835	87.03	70	120	
Sc	45	3	HEHe	111723	1.42	111888	99.85	70	120	

Total Metals by 6010C Summary Forms

6010C 3015
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-033 **Method Type:** 6010C 3015 **SOW No.:**

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockhee **SAS No.:**

Lab Sample ID	Client Sample ID	QC Description
2070699002	MRC-MW-07A-051215	
2070699005	MRC-MW-25A-051315	
2070699005S	MRC-MW-25A-051315S	Matrix Spike
2070699005SD	MRC-MW-25A-051315SD	Matrix Spike Duplicate
2070699009	MRC-MW-42A-051315	
2070699010	MRC-MW-48A-051315	
2070699011	MRC-MW-24A-051315	
2070699012	MRC-MW-41A-051315	

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:_____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: **Lisa Miller**

Date: _____ Title: **Metals Manager**

6010C 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.977	1.000	98		90 - 110	P	5/19/2015	08:25	051915A 30
CCV	Iron	2.488	2.500	100		90 - 110	P	5/19/2015	08:37	051915A 30
CCV	Iron	2.555	2.500	102		90 - 110	P	5/19/2015	09:38	051915A 30
CCV	Iron	2.549	2.500	102		90 - 110	P	5/19/2015	10:22	051915A 30
CCV	Iron	2.564	2.500	103		90 - 110	P	5/19/2015	11:08	051915A 30
CCV	Iron	2.655	2.500	106		90 - 110	P	5/19/2015	13:21	051915A 30
LLCCV	Iron	0.069	0.060	115		70 - 130	P	5/19/2015	13:28	051915A 30
ICV	Iron	0.968	1.000	97		90 - 110	P	5/20/2015	08:52	052015A 30
CCV	Iron	2.509	2.500	100		90 - 110	P	5/20/2015	09:09	052015A 30
CCV	Iron	2.513	2.500	101		90 - 110	P	5/20/2015	10:09	052015A 30
CCV	Iron	2.529	2.500	101		90 - 110	P	5/20/2015	10:54	052015A 30

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV	Iron	2.484	2.500	99		90 - 110	P	5/20/2015	11:38	052015A 30
CCV	Iron	2.459	2.500	98		90 - 110	P	5/20/2015	13:08	052015A 30
LLCCV	Iron	0.057	0.060	95		70 - 130	P	5/20/2015	13:15	052015A 30

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- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.063	0.060	105		70 - 130	P	5/19/2015	08:33	051915A 3
CRDL										
	Iron	0.057	0.060	95		70 - 130	P	5/20/2015	09:05	052015A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/19/2015	08:29	051915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/19/2015	09:41	051915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/19/2015	10:26	051915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/19/2015	11:11	051915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/19/2015	13:25	051915A 3015
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	09:01	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	10:13	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	10:57	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	11:42	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	13:11	052015A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2177670			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/19/2015	09:01	051915A 3015
2179718			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/20/2015	09:34	052015A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	117.9	125.0	94		80 - 120%	5/19/2015	08:50	051915A 3015
ICSAB									
	Iron	121.9	125.0	98		80 - 120%	5/19/2015	08:53	051915A 3015
ICSA									
	Iron	127.2	125.0	102		80 - 120%	5/19/2015	13:32	051915A 3015
ICSAB									
	Iron	127.9	125.0	102		80 - 120%	5/19/2015	13:36	051915A 3015
ICSA									
	Iron	116.5	125.0	93		80 - 120%	5/20/2015	09:15	052015A 3015
ICSAB									
	Iron	116.1	125.0	93		80 - 120%	5/20/2015	09:19	052015A 3015
ICSA									
	Iron	115.6	125.0	92		80 - 120%	5/20/2015	13:19	052015A 3015
ICSAB									
	Iron	119.0	125.0	95		80 - 120%	5/20/2015	13:22	052015A 3015

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699005 **Client ID:** MRC-MW-25A-051315S **LIMS ID:** 2179720

Percent Solids for Sample: 0.00 **Spiked ID:** 2070699005S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	13.133		11.689		1.111	NSC		P

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699005 **Client ID:** MRC-MW-25A-051315SD **LIMS ID:** 2179721

Percent Solids for Sample: 0.00 **Spiked ID:** 2070699005SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	13.156		11.689		1.111	NSC		P

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699005S **Client ID:** MRC-MW-25A-051315SD **LIMS ID:** 2179721

Percent Solids for Sample: 0.00 **Duplicate ID:** 2070699005SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	mg/L	0 - 20	13.133		13.156		0.2		P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2177671									
	Iron	mg/L	1.11	1.166		105		80 - 120	P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2179719									
	Iron	mg/L	1.11	1.130		102		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-033
Contract: TMM033|112IL06247 **Lab Code:** CAS
Method: P
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	72977						
2177670	MB for HBN 72977 [MDIG/50837	MB	QC-WAT	5/15/15	45.0	50.0	
2177671	LCS for HBN 72977 [MDIG/50837	LCS	QC-WAT	5/15/15	45.0	50.0	
2070699002	MRC-MW-07A-051215	SAM	WATER	5/15/15	45.0	50.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	73771						
2179718	MB for HBN 73771 [MDIG/50906	MB	QC-WAT	5/19/15	45.0	50.0	
2179719	LCS for HBN 73771 [MDIG/50906	LCS	QC-WAT	5/19/15	45.0	50.0	
2070699005	MRC-MW-25A-051315	SAM	WATER	5/19/15	45.0	50.0	
2070699005S	MRC-MW-25A-051315S	MS	WATER	5/19/15	45.0	50.0	
2070699005SD	MRC-MW-25A-051315SD	MSD	WATER	5/19/15	45.0	50.0	
2070699009	MRC-MW-42A-051315	SAM	WATER	5/19/15	45.0	50.0	
2070699010	MRC-MW-48A-051315	SAM	WATER	5/19/15	45.0	50.0	
2070699011	MRC-MW-24A-051315	SAM	WATER	5/19/15	45.0	50.0	
2070699012	MRC-MW-41A-051315	SAM	WATER	5/19/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0805												X													
ICAL2	1.00	0808												X													
ICAL3	1.00	0812												X													
ICAL4	1.00	0816												X													
ICAL5	1.00	0819												X													
ICV1	1.00	0825												X													
ICB1	1.00	0829												X													
CRDL1	1.00	0833												X													
CCV1	1.00	0837												X													
HIGH	1.00	0840												X													
ZZZZZZ	1.00	0844																									
ICS-A2	1.00	0850												X													
ICS-AB1	1.00	0853												X													
2177670	1.00	0901												X													
2177671	1.00	0904												X													
ZZZZZZ	1.00	0908																									
ZZZZZZ	1.00	0912																									
ZZZZZZ	1.00	0915																									
ZZZZZZ	1.00	0919																									
ZZZZZZ	1.00	0923																									
ZZZZZZ	1.00	0927																									
ZZZZZZ	1.00	0930																									
ZZZZZZ	1.00	0934																									
CCV2	1.00	0938												X													
CCB1	1.00	0941												X													
ZZZZZZ	5.00	0945																									
ZZZZZZ	500.00	0949																									
ZZZZZZ	1.00	0953																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	1000																									
ZZZZZZ	1.00	1004																									
ZZZZZZ	1.00	1008																									
ZZZZZZ	1.00	1011																									
ZZZZZZ	1.00	1015																									
ZZZZZZ	1.00	1019																									
CCV3	1.00	1022												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB2	1.00	1026												X												
ZZZZZZ	1.00	1030																								
ZZZZZZ	1.00	1033																								
ZZZZZZ	1.00	1037																								
2070699002	1.00	1041												X												
ZZZZZZ	2.00	1045																								
ZZZZZZ	1.00	1049																								
ZZZZZZ	1.00	1053																								
ZZZZZZ	1.00	1057																								
ZZZZZZ	1.00	1100																								
ZZZZZZ	1.00	1104																								
CCV4	1.00	1108												X												
CCB3	1.00	1111												X												
ZZZZZZ	1.00	1115																								
ZZZZZZ	1.00	1119																								
ZZZZZZ	1.00	1123																								
ZZZZZZ	1.00	1126																								
ZZZZZZ	1.00	1130																								
ZZZZZZ	1.00	1134																								
ZZZZZZ	1.00	1137																								
ZZZZZZ	1.00	1141																								
ZZZZZZ	1.00	1145																								
ZZZZZZ	1.00	1148																								
ZZZZZZ	1.00	1152																								
ZZZZZZ	1.00	1155																								
ZZZZZZ	1.00	1159																								
ZZZZZZ	1.00	1203																								
ZZZZZZ	1.00	1207																								
ZZZZZZ	1.00	1210																								
ZZZZZZ	1.00	1214																								
ZZZZZZ	1.00	1218																								
ZZZZZZ	1.00	1221																								
ZZZZZZ	1.00	1225																								
ZZZZZZ	1.00	1229																								
ZZZZZZ	1.00	1233																								
ZZZZZZ	1.00	1237																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1241																										
ZZZZZZ	1.00	1246																										
ZZZZZZ	1.00	1250																										
ZZZZZZ	2.00	1254																										
ZZZZZZ	2.00	1257																										
ZZZZZZ	2.00	1301																										
ZZZZZZ	5.00	1305																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1312																										
ZZZZZZ	1.00	1316																										
CCV8	1.00	1321											X															
CCB6	1.00	1325											X															
LLCCV	1.00	1328											X															
ICS-A3	1.00	1332											X															
ICS-AB2	1.00	1336											X															
ZZZZZZ	1.00	1342																										
ZZZZZZ	1.00	1346																										
ZZZZZZ	1.00	1349																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	5.00	1357																										
ZZZZZZ	5.00	1400																										
ZZZZZZ	5.00	1404																										
ZZZZZZ	5.00	1408																										
ZZZZZZ	5.00	1412																										
ZZZZZZ	5.00	1415																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	5.00	1426																										
ZZZZZZ	5.00	1430																										
ZZZZZZ	5.00	1434																										
ZZZZZZ	5.00	1438																										
ZZZZZZ	5.00	1441																										
ZZZZZZ	5.00	1445																										
ZZZZZZ	5.00	1449																										
ZZZZZZ	5.00	1453																										
ZZZZZZ	5.00	1456																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1501																								
ZZZZZZ	1.00	1505																								
ZZZZZZ	1.00	1508																								
ZZZZZZ	5.00	1512																								
ZZZZZZ	5.00	1516																								
ZZZZZZ	1.00	1520																								
ZZZZZZ	1.00	1523																								
ZZZZZZ	1.00	1527																								
ZZZZZZ	1.00	1531																								
ZZZZZZ	1.00	1535																								
ZZZZZZ	5.00	1539																								
ZZZZZZ	1.00	1543																								
ZZZZZZ	1.00	1547																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1558																								
ZZZZZZ	1.00	1602																								
ZZZZZZ	1.00	1605																								
ZZZZZZ	1.00	2208																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0828												X																
ICAL2	1.00	0831												X																
ICAL3	1.00	0835												X																
ICAL4	1.00	0839												X																
ICAL5	1.00	0842												X																
ZZZZZZ	1.00	0848																												
ICV2	1.00	0852												X																
ZZZZZZ	1.00	0857																												
ICB2	1.00	0901												X																
CRDL1	1.00	0905												X																
CCV1	1.00	0909												X																
HIGH	1.00	0912												X																
ICS-A1	1.00	0915												X																
ICS-AB1	1.00	0919												X																
ZZZZZZ	1.00	0926																												
ZZZZZZ	1.00	0930																												
2179718	1.00	0934												X																
2179719	1.00	0937												X																
ZZZZZZ	1.00	0941																												
ZZZZZZ	1.00	0945																												
ZZZZZZ	1.00	0948																												
ZZZZZZ	1.00	0952																												
ZZZZZZ	1.00	0956																												
ZZZZZZ	1.00	1000																												
CCV2	1.00	1009												X																
CCB1	1.00	1013												X																
ZZZZZZ	1.00	1016																												
ZZZZZZ	1.00	1020																												
ZZZZZZ	1.00	1024																												
ZZZZZZ	2.00	1028																												
ZZZZZZ	1.00	1032																												
2070699005	1.00	1035												X																
2070699005S	1.00	1039												X																
2070699005SD	1.00	1043												X																
2070699009	1.00	1046												X																
2070699010	1.00	1050												X																

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV3	1.00	1054												X													
CCB2	1.00	1057												X													
2070699011	1.00	1101												X													
2070699012	1.00	1105												X													
ZZZZZZ	1.00	1109																									
ZZZZZZ	1.00	1112																									
ZZZZZZ	1.00	1116																									
ZZZZZZ	1.00	1120																									
ZZZZZZ	1.00	1124																									
ZZZZZZ	1.00	1127																									
ZZZZZZ	1.00	1131																									
ZZZZZZ	1.00	1135																									
CCV4	1.00	1138												X													
CCB3	1.00	1142												X													
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1149																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1157																									
ZZZZZZ	1.00	1201																									
ZZZZZZ	1.00	1204																									
ZZZZZZ	1.00	1208																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1216																									
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1223																									
ZZZZZZ	1.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1238																									
ZZZZZZ	1.00	1242																									
ZZZZZZ	2.00	1245																									
ZZZZZZ	2.00	1249																									
ZZZZZZ	5.00	1253																									
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1300																									
ZZZZZZ	1.00	1304																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1308												X													
CCB5	1.00	1311												X													
LLCCV	1.00	1315												X													
ICS-A2	1.00	1319												X													
ICS-AB2	1.00	1322												X													
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1443																									
ZZZZZZ	1.00	1447																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1454																									
ZZZZZZ	1.00	1501																									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1508																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0805												X													
ICAL2	1.00	0808												X													
ICAL3	1.00	0812												X													
ICAL4	1.00	0816												X													
ICAL5	1.00	0819												X													
ICV1	1.00	0825												X													
ICB1	1.00	0829												X													
CRDL1	1.00	0833												X													
CCV1	1.00	0837												X													
HIGH	1.00	0840												X													
ZZZZZZ	1.00	0844																									
ICS-A2	1.00	0850												X													
ICS-AB1	1.00	0853												X													
2177670	1.00	0901												X													
2177671	1.00	0904												X													
ZZZZZZ	1.00	0908																									
ZZZZZZ	1.00	0912																									
ZZZZZZ	1.00	0915																									
ZZZZZZ	1.00	0919																									
ZZZZZZ	1.00	0923																									
ZZZZZZ	1.00	0927																									
ZZZZZZ	1.00	0930																									
ZZZZZZ	1.00	0934																									
CCV2	1.00	0938												X													
CCB1	1.00	0941												X													
ZZZZZZ	5.00	0945																									
ZZZZZZ	500.00	0949																									
ZZZZZZ	1.00	0953																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	1000																									
ZZZZZZ	1.00	1004																									
ZZZZZZ	1.00	1008																									
ZZZZZZ	1.00	1011																									
ZZZZZZ	1.00	1015																									
ZZZZZZ	1.00	1019																									
CCV3	1.00	1022												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
CCB2	1.00	1026												X																
ZZZZZZ	1.00	1030																												
ZZZZZZ	1.00	1033																												
ZZZZZZ	1.00	1037																												
2070699002	1.00	1041												X																
ZZZZZZ	2.00	1045																												
ZZZZZZ	1.00	1049																												
ZZZZZZ	1.00	1053																												
ZZZZZZ	1.00	1057																												
ZZZZZZ	1.00	1100																												
ZZZZZZ	1.00	1104																												
CCV4	1.00	1108												X																
CCB3	1.00	1111												X																
ZZZZZZ	1.00	1115																												
ZZZZZZ	1.00	1119																												
ZZZZZZ	1.00	1123																												
ZZZZZZ	1.00	1126																												
ZZZZZZ	1.00	1130																												
ZZZZZZ	1.00	1134																												
ZZZZZZ	1.00	1137																												
ZZZZZZ	1.00	1141																												
ZZZZZZ	1.00	1145																												
ZZZZZZ	1.00	1148																												
ZZZZZZ	1.00	1152																												
ZZZZZZ	1.00	1155																												
ZZZZZZ	1.00	1159																												
ZZZZZZ	1.00	1203																												
ZZZZZZ	1.00	1207																												
ZZZZZZ	1.00	1210																												
ZZZZZZ	1.00	1214																												
ZZZZZZ	1.00	1218																												
ZZZZZZ	1.00	1221																												
ZZZZZZ	1.00	1225																												
ZZZZZZ	1.00	1229																												
ZZZZZZ	1.00	1233																												
ZZZZZZ	1.00	1237																												

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1241																										
ZZZZZZ	1.00	1246																										
ZZZZZZ	1.00	1250																										
ZZZZZZ	2.00	1254																										
ZZZZZZ	2.00	1257																										
ZZZZZZ	2.00	1301																										
ZZZZZZ	5.00	1305																										
ZZZZZZ	1.00	1309																										
ZZZZZZ	1.00	1312																										
ZZZZZZ	1.00	1316																										
CCV8	1.00	1321											X															
CCB6	1.00	1325											X															
LLCCV	1.00	1328											X															
ICS-A3	1.00	1332											X															
ICS-AB2	1.00	1336											X															
ZZZZZZ	1.00	1342																										
ZZZZZZ	1.00	1346																										
ZZZZZZ	1.00	1349																										
ZZZZZZ	1.00	1353																										
ZZZZZZ	5.00	1357																										
ZZZZZZ	5.00	1400																										
ZZZZZZ	5.00	1404																										
ZZZZZZ	5.00	1408																										
ZZZZZZ	5.00	1412																										
ZZZZZZ	5.00	1415																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	5.00	1426																										
ZZZZZZ	5.00	1430																										
ZZZZZZ	5.00	1434																										
ZZZZZZ	5.00	1438																										
ZZZZZZ	5.00	1441																										
ZZZZZZ	5.00	1445																										
ZZZZZZ	5.00	1449																										
ZZZZZZ	5.00	1453																										
ZZZZZZ	5.00	1456																										

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 051915A 3015

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1501																								
ZZZZZZ	1.00	1505																								
ZZZZZZ	1.00	1508																								
ZZZZZZ	5.00	1512																								
ZZZZZZ	5.00	1516																								
ZZZZZZ	1.00	1520																								
ZZZZZZ	1.00	1523																								
ZZZZZZ	1.00	1527																								
ZZZZZZ	1.00	1531																								
ZZZZZZ	1.00	1535																								
ZZZZZZ	5.00	1539																								
ZZZZZZ	1.00	1543																								
ZZZZZZ	1.00	1547																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1558																								
ZZZZZZ	1.00	1602																								
ZZZZZZ	1.00	1605																								
ZZZZZZ	1.00	2208																								

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0828												X																
ICAL2	1.00	0831												X																
ICAL3	1.00	0835												X																
ICAL4	1.00	0839												X																
ICAL5	1.00	0842												X																
ZZZZZZ	1.00	0848																												
ICV2	1.00	0852												X																
ZZZZZZ	1.00	0857																												
ICB2	1.00	0901												X																
CRDL1	1.00	0905												X																
CCV1	1.00	0909												X																
HIGH	1.00	0912												X																
ICS-A1	1.00	0915												X																
ICS-AB1	1.00	0919												X																
ZZZZZZ	1.00	0926																												
ZZZZZZ	1.00	0930																												
2179718	1.00	0934												X																
2179719	1.00	0937												X																
ZZZZZZ	1.00	0941																												
ZZZZZZ	1.00	0945																												
ZZZZZZ	1.00	0948																												
ZZZZZZ	1.00	0952																												
ZZZZZZ	1.00	0956																												
ZZZZZZ	1.00	1000																												
CCV2	1.00	1009												X																
CCB1	1.00	1013												X																
ZZZZZZ	1.00	1016																												
ZZZZZZ	1.00	1020																												
ZZZZZZ	1.00	1024																												
ZZZZZZ	2.00	1028																												
ZZZZZZ	1.00	1032																												
2070699005	1.00	1035												X																
2070699005S	1.00	1039												X																
2070699005SD	1.00	1043												X																
2070699009	1.00	1046												X																
2070699010	1.00	1050												X																

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV3	1.00	1054												X													
CCB2	1.00	1057												X													
2070699011	1.00	1101												X													
2070699012	1.00	1105												X													
ZZZZZZ	1.00	1109																									
ZZZZZZ	1.00	1112																									
ZZZZZZ	1.00	1116																									
ZZZZZZ	1.00	1120																									
ZZZZZZ	1.00	1124																									
ZZZZZZ	1.00	1127																									
ZZZZZZ	1.00	1131																									
ZZZZZZ	1.00	1135																									
CCV4	1.00	1138												X													
CCB3	1.00	1142												X													
ZZZZZZ	1.00	1146																									
ZZZZZZ	1.00	1149																									
ZZZZZZ	1.00	1153																									
ZZZZZZ	1.00	1157																									
ZZZZZZ	1.00	1201																									
ZZZZZZ	1.00	1204																									
ZZZZZZ	1.00	1208																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1216																									
ZZZZZZ	1.00	1219																									
ZZZZZZ	1.00	1223																									
ZZZZZZ	1.00	1227																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1238																									
ZZZZZZ	1.00	1242																									
ZZZZZZ	2.00	1245																									
ZZZZZZ	2.00	1249																									
ZZZZZZ	5.00	1253																									
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1300																									
ZZZZZZ	1.00	1304																									

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1308												X													
CCB5	1.00	1311												X													
LLCCV	1.00	1315												X													
ICS-A2	1.00	1319												X													
ICS-AB2	1.00	1322												X													
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1443																									
ZZZZZZ	1.00	1447																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1454																									
ZZZZZZ	1.00	1501																									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1508																									

Total Mercury by 7470A Summary Forms

7470A
- COVER PAGE -
INORGANIC ANALYSIS DATA PACKAGE

Client: Tetra Tech Pittsburgh

SDG No.: TMM-033 Method Type: 7470A SOW No.:

Contract: TMM033|112IL06247 Lab Code: CAS Case No.: Lockhee SAS No.:

Lab Sample ID	Client Sample ID	QC Description
2070699002	MRC-MW-07A-051215	
2070699005	MRC-MW-25A-051315	
2070699009	MRC-MW-42A-051315	
2070699010	MRC-MW-48A-051315	
2070699011	MRC-MW-24A-051315	
2070699012	MRC-MW-41A-051315	
2070699012S	MRC-MW-41A-051315S	Matrix Spike
2070699012SD	MRC-MW-41A-051315SD	Matrix Spike Duplicate

Were ICP interelement corrections applied?	Yes/No	Yes	
Were ICP background corrections applied?	Yes/No	Yes	
If yes - were raw data generated before applications of background corrections?	Yes/No	No	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: **Lisa Miller**

Date: Title: **Metals Manager**

7470A
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	12:47	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	13:53	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	14:07	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	14:12	052115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/21/2015	14:24	052115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/21/2015	14:37	052115W

7470A
- 3a -
INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	12:48	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	13:54	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:08	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:13	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:26	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:38	052115W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2180381			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/21/2015	14:06	052115W

7470A
- 5a -
MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699012 **Client ID:** MRC-MW-41A-051315S **LIMS ID:** 2180385

Percent Solids for Sample: 0.00 **Spiked ID:** 2070699012S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0050		0.0005	U	0.0050	100.00		CV

7470A
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699012 **Client ID:** MRC-MW-41A-051315SD **LIMS ID:** 2180386

Percent Solids for Sample: 0.00 **Spiked ID:** 2070699012SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0051		0.0005	U	0.0050	102.00		CV

7470A
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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2070699012S **Client ID:** MRC-MW-41A-051315SD **LIMS ID:** 2180386

Percent Solids for Sample: 0.00 **Duplicate ID:** 2070699012SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0050		0.0051		2.0		CV

7470A

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2180382									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-033

Contract: TMM033|112IL06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	74116						
2180381	MB for HBN 74116 [MDIG/50930	MB	QC-WAT	5/21/15	25.0	25.0	
2180382	LCS for HBN 74116 [MDIG/50930	LCS	QC-WAT	5/21/15	25.0	25.0	
2070699002	MRC-MW-07A-051215	SAM	WATER	5/21/15	25.0	25.0	
2070699005	MRC-MW-25A-051315	SAM	WATER	5/21/15	25.0	25.0	
2070699009	MRC-MW-42A-051315	SAM	WATER	5/21/15	25.0	25.0	
2070699010	MRC-MW-48A-051315	SAM	WATER	5/21/15	25.0	25.0	
2070699011	MRC-MW-24A-051315	SAM	WATER	5/21/15	25.0	25.0	
2070699012	MRC-MW-41A-051315	SAM	WATER	5/21/15	25.0	25.0	
2070699012S	MRC-MW-41A-051315S	MS	WATER	5/21/15	25.0	25.0	
2070699012SD	MRC-MW-41A-051315SD	MSD	WATER	5/21/15	25.0	25.0	

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1240																X								
Standard #1 (0.2ppb	1.00	1241																X								
	1.00	1242																X								
	1.00	1243																X								
	1.00	1244																X								
	1.00	1246																X								
ICV1	1.00	1247																X								
ICB1	1.00	1248																X								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
ZZZZZZ	1.00	1301																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1303																								
ZZZZZZ	1.00	1304																								
ZZZZZZ	1.00	1306																								
ZZZZZZ	1.00	1307																								
ZZZZZZ	1.00	1308																								
ZZZZZZ	1.00	1309																								
ZZZZZZ	1.00	1310																								
ZZZZZZ	1.00	1311																								
ZZZZZZ	1.00	1312																								
ZZZZZZ	1.00	1313																								
ZZZZZZ	1.00	1314																								
ZZZZZZ	1.00	1315																								
ZZZZZZ	1.00	1316																								
ZZZZZZ	1.00	1317																								
ZZZZZZ	1.00	1319																								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1320																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1323																									
ZZZZZZ	1.00	1324																									
ZZZZZZ	1.00	1325																									
ZZZZZZ	1.00	1326																									
ZZZZZZ	1.00	1327																									
ZZZZZZ	1.00	1328																									
ZZZZZZ	1.00	1330																									
ZZZZZZ	1.00	1331																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1335																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1339																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1341																									
ZZZZZZ	1.00	1342																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1345																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1350																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1352																									
CCV5	1.00	1353																X									
CCB5	1.00	1354																X									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1357																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1359																									

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1400																										
ZZZZZZ	1.00	1401																										
ZZZZZZ	1.00	1402																										
ZZZZZZ	1.00	1403																										
ZZZZZZ	1.00	1405																										
2180381	1.00	1406																X										
CCV6	1.00	1407																X										
CCB6	1.00	1408																X										
ZZZZZZ	1.00	1409																										
ZZZZZZ	1.00	1410																										
CCV7	1.00	1412																X										
CCB7	1.00	1413																X										
2180382	1.00	1414																X										
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1416																										
ZZZZZZ	1.00	1417																										
ZZZZZZ	1.00	1418																										
ZZZZZZ	1.00	1419																										
ZZZZZZ	1.00	1420																										
ZZZZZZ	1.00	1421																										
ZZZZZZ	1.00	1422																										
ZZZZZZ	1.00	1423																										
CCV8	1.00	1424																X										
CCB8	1.00	1426																X										
ZZZZZZ	1.00	1427																										
ZZZZZZ	1.00	1428																										
2070699002	1.00	1429																X										
2070699005	1.00	1430																X										
2070699009	1.00	1431																X										
2070699010	1.00	1432																X										
2070699011	1.00	1433																X										
2070699012	1.00	1434																X										
2070699012S	1.00	1435																X										
2070699012SD	1.00	1436																X										
CCV9	1.00	1437																X										
CCB9	1.00	1438																X										

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1439																								
ZZZZZZ	1.00	1441																								
ZZZZZZ	1.00	1442																								
ZZZZZZ	1.00	1443																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1445																								
ZZZZZZ	1.00	1446																								
ZZZZZZ	1.00	1447																								
ZZZZZZ	1.00	1448																								
ZZZZZZ	1.00	1449																								
ZZZZZZ	1.00	1450																								
ZZZZZZ	1.00	1451																								
ZZZZZZ	1.00	1452																								
ZZZZZZ	1.00	1453																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1456																								
ZZZZZZ	1.00	1457																								
ZZZZZZ	1.00	1458																								
ZZZZZZ	1.00	1459																								
ZZZZZZ	1.00	1500																								
ZZZZZZ	1.00	1501																								
ZZZZZZ	1.00	1502																								
ZZZZZZ	1.00	1503																								
ZZZZZZ	1.00	1504																								
ZZZZZZ	1.00	1505																								
ZZZZZZ	1.00	1507																								
ZZZZZZ	1.00	1508																								
ZZZZZZ	1.00	1509																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1511																								
ZZZZZZ	1.00	1512																								
ZZZZZZ	1.00	1513																								
ZZZZZZ	1.00	1514																								
ZZZZZZ	1.00	1515																								
ZZZZZZ	1.00	1516																								
ZZZZZZ	1.00	1517																								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM033|112IL06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-033

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1519																									
ZZZZZZ	1.00	1520																									
ZZZZZZ	1.00	1521																									
ZZZZZZ	1.00	1522																									
ZZZZZZ	1.00	1523																									
ZZZZZZ	1.00	1524																									
ZZZZZZ	1.00	1525																									
ZZZZZZ	1.00	1526																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1530																									
ZZZZZZ	1.00	1531																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1534																									
ZZZZZZ	1.00	1535																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1542																									
ZZZZZZ	1.00	1544																									
ZZZZZZ	1.00	1545																									

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 17, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/OVG/1,4-DIOXANE/TOTAL METALS/PERCHLORATE/ MISCELLANEOUS PARAMETERS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2071034

SAMPLES:

6/Aqueous/VOCs

MRC-MW-109B-051415	MRC-MW-115A-051415	MRC-MW-21A-051415
MRC-MW-21B-051415	MRC-MW-93A-051415	TB-051415-2071034

1/Aqueous/OVG

MRC-MW-21B-051415

2/Aqueous/1,4-Dioxane

MRC-MW-21A-051415 MRC-MW-21B-051415

5/Aqueous/Metals

MRC-MW-109B-051415	MRC-MW-21A-051415	MRC-MW-21B-051415
MRC-MW-93A-051415	MRC-MW-DUP07-051415	

1/Aqueous/Perchlorate

MRC-MW-109B-051415

1/Aqueous/Miscellaneous

MRC-MW-21B-051415

Overview

The sample set for LMC-MRC, SDG 2071034 consisted of six (6) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), organic volatile gases (OVG), 1,4-dioxane, metals, perchlorate, and/or miscellaneous parameters (alkalinity, ammonia, chloride, dissolved organic carbon, nitrate, nitrite, orthophosphate, sulfate, and total dissolved solids). One field duplicate sample pair was included in this SDG: MRC-MW-21B-051415/ MRC-MW-DUP07-051415.

The samples were collected by Tetra Tech, Inc. on May 14, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, and 9060A, EPA Methods 300, 365.3, 522, and 6850, Standard Methods 4500NH3D, 2320B, and 2540C, and RSK-175 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation

blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Major – None.

Minor

- The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Bromomethane	0.51	2.55
Carbon disulfide	0.39	1.95
1,4-Dichlorobenzene	0.31	1.55

Maximum concentration detected in the laboratory method blank 2180033 affecting all samples.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U). The trip blank was not qualified for laboratory blank contamination.

- The following analytes were detected in the laboratory calibration and preparation blanks at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Alkalinity(1)	1.82	9.1
Ammonia(2)	0.044	0.22

1 – Maximum concentration in calibration blank.
2 – Maximum concentration in preparation blank 2179819.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

Trichloroethene was reported at a 20X dilution in sample MRC-MW-21B-051415 and cis-1,2-dichloroethene was reported at a 10X dilution in sample MRC-MW-109B-051415. The results for these compounds in undiluted samples exceeded the calibration range.

Barium, cobalt, manganese, and nickel were analyzed at a 10X dilution in sample MRC-MW-93A-051415.

Executive Summary

Laboratory Performance: Contaminants were detected in the laboratory method blanks.

Other Factors Affecting Data Quality:

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 06247	NSAMPLE	MRC-MW-109B-051415			MRC-MW-109B-051415-DL			MRC-MW-115A-051415			MRC-MW-21A-051415		
SDG: 2071034	LAB_ID	2071034007			2071034007			2071034003			2071034004		
FRACTION: OV	SAMP_DATE	5/14/2015			5/14/2015			5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U		0.26	U	
1,1-DICHLOROETHANE		0.28	U					0.28	U		2.1		
1,1-DICHLOROETHENE		2.2						0.29	U		1.8		
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U					1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U					0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U					0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U					0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U					0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U					0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U					0.27	U		0.27	U	
1,4-DIOXANE		58.9	U					58.9	U		58.9	U	
2-BUTANONE		1.8	U					1.8	U		1.8	U	
2-HEXANONE		1.3	U					1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U					1.5	U		1.5	U	
ACETONE		20.9						3.1	U		3.1	U	
BENZENE		123						0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U					0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U					0.27	U		0.27	U	
BROMOFORM		0.4	U					0.4	U		0.4	U	
BROMOMETHANE		0.39	U					0.44	U	A	0.39	U	
CARBON DISULFIDE		0.23	U					0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U					0.31	U		0.31	U	
CHLOROBENZENE		0.19	U					0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U					0.45	U		0.45	U	
CHLOROETHANE		0.33	U					0.33	U		0.33	U	
CHLOROFORM		0.21	U					0.21	U		0.21	U	
CHLOROMETHANE		0.31	U					0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE					302			0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U		0.31	U	
CYCLOHEXANE		1.9						0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-21B-051415			MRC-MW-21B-051415-DL			MRC-MW-93A-051415			TB-051415-2071034		
SDG: 2071034	LAB_ID	2071034006			2071034006			2071034002			2071034001		
FRACTION: OV	SAMP_DATE	5/14/2015			5/14/2015			5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1.1						0.26	U		0.26	U	
1,1-DICHLOROETHANE		15.9						0.28	U		0.28	U	
1,1-DICHLOROETHENE		195						0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U					1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U					0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U					0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U					0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U					0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U					0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U					0.27	U		0.27	U	
1,4-DIOXANE		58.9	U					58.9	U		58.9	U	
2-BUTANONE		1.8	U					1.8	U		6.9	J	P
2-HEXANONE		1.3	U					1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U					1.5	U		1.5	U	
ACETONE		3.1	U					4.4	J	P	7.5	J	P
BENZENE		29.5						0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U					0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U					0.27	U		0.27	U	
BROMOFORM		0.4	U					0.4	U		0.4	U	
BROMOMETHANE		0.39	U					0.4	U	A	0.39	J	P
CARBON DISULFIDE		0.23	U					0.25	U	A	0.29	J	P
CARBON TETRACHLORIDE		0.31	U					0.31	U		0.31	U	
CHLOROBENZENE		0.19	U					0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U					0.45	U		0.45	U	
CHLOROETHANE		0.33	U					0.33	U		0.33	U	
CHLOROFORM		0.35	J	P				0.21	U		0.21	U	
CHLOROMETHANE		0.31	U					0.39	J	P	0.31	U	
CIS-1,2-DICHLOROETHENE		7.2						2.1			0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U		0.31	U	
CYCLOHEXANE		1.1						0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-109B-051415			MRC-MW-109B-051415-DL			MRC-MW-115A-051415			MRC-MW-21A-051415		
SDG: 2071034	LAB_ID	2071034007			2071034007			2071034003			2071034004		
FRACTION: OV	SAMP_DATE	5/14/2015			5/14/2015			5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U		0.33	U	
ETHYLBENZENE		0.34	U					0.34	U		0.34	U	
ISOPROPYLBENZENE		1.9						0.22	U		0.22	U	
M+P-XYLENES		0.64	J	P				0.52	U		0.52	U	
METHYL ACETATE		0.32	U					0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U					0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		11.2						0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U					0.45	U		0.45	U	
O-XYLENE		6.5						0.33	U		0.33	U	
STYRENE		0.24	U					0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U					0.35	U		0.37	J	P
TOLUENE		0.33	J	P				0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		28.8						0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U		0.29	U	
TRICHLOROETHENE		87.2						0.33	U		1.7		
TRICHLOROFLUOROMETHANE		0.24	U					0.24	U		0.24	U	
VINYL CHLORIDE		19.1						0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-21B-051415			MRC-MW-21B-051415-DL			MRC-MW-93A-051415			TB-051415-2071034		
SDG: 2071034	LAB_ID	2071034006			2071034006			2071034002			2071034001		
FRACTION: OV	SAMP_DATE	5/14/2015			5/14/2015			5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U		0.33	U	
ETHYLBENZENE		0.34	U					0.34	U		0.34	U	
ISOPROPYLBENZENE		14						0.22	U		0.22	U	
M+P-XYLENES		0.52	U					0.52	U		0.52	U	
METHYL ACETATE		0.32	U					0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U					0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U		0.33	U	
METHYLENE CHLORIDE		0.45	U					0.45	U		0.45	U	
O-XYLENE		0.33	U					0.33	U		0.33	U	
STYRENE		0.24	U					0.24	U		0.24	U	
TETRACHLOROETHENE		8.4						0.35	U		0.35	U	
TOLUENE		0.23	U					0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U					0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U		0.29	U	
TRICHLOROETHENE					708			2.9			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U					0.24	U		0.24	U	
VINYL CHLORIDE		0.76	J	P				0.3	U		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-21A-051415			MRC-MW-21B-051415-DL		
SDG: 2071034	LAB_ID	2071034004			2071034006		
FRACTION: OS	SAMP_DATE	5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		1.5			47.1		

PROJ_NO: 06247	NSAMPLE	MRC-MW-21B-051415		
SDG: 2071034	LAB_ID	2071034006		
FRACTION: OVG	SAMP_DATE	5/14/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ETHANE		0.23	U	
ETHENE		0.4	U	
METHANE		16.8		

PROJ_NO: 06247	NSAMPLE	MRC-MW-109B-051415			MRC-MW-21A-051415			MRC-MW-21B-051415			MRC-MW-93A-051415		
SDG: 2071034	LAB_ID	2071034007			2071034004			2071034006			2071034002		
FRACTION: M	SAMP_DATE	5/14/2015			5/14/2015			5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.0012	J	P
ARSENIC		0.001	U		0.0027	J	P	0.001	U		0.041		
BARIUM		0.39			0.053			0.1					
BERYLLIUM		0.012			0.00054	J	P	0.00067	J	P	0.074		
CADMIUM		0.0012			0.00037	U		0.00037	U		0.0053		
CHROMIUM		0.0012	J	P	0.0042			0.00074	U		0.18		
COBALT		0.97			0.0059			0.081					
COPPER		0.03			0.0042	J	P	0.0019	U		0.3		
IRON		0.39			5.7			29.2			236		
LEAD		0.0018	J	P	0.0014	J	P	0.00074	U		0.086		
MANGANESE		3.4			0.74			3.4					
MERCURY		0.00017	U		0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM		0.00074	U		0.00093	J	P	0.00074	U		0.015		
NICKEL		1.2			0.0069			0.083					
SELENIUM		0.0019	U		0.0019	U		0.0019	U		0.12		
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.00082	J	P
VANADIUM		0.0011	J	P	0.0051			0.00074	U		0.13		

PROJ_NO: 06247	NSAMPLE	MRC-MW-93A-051415-DL			MRC-MW-DUP07-051415		
SDG: 2071034	LAB_ID	2071034002			2071034005		
FRACTION: M	SAMP_DATE	5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				MRC-MW-21B-051415		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY					0.00074	U	
ARSENIC					0.001	U	
BARIUM		1.3			0.1		
BERYLLIUM					0.00068	J	P
CADMIUM					0.00037	U	
CHROMIUM					0.00074	U	
COBALT		5.3			0.081		
COPPER					0.0019	U	
IRON					30.3		
LEAD					0.00074	U	
MANGANESE		11.5			3.4		
MERCURY					0.00017	U	
MOLYBDENUM					0.00074	U	
NICKEL		5.6			0.084		
SELENIUM					0.0019	U	
SILVER					0.00074	U	
THALLIUM					0.0003	U	
VANADIUM					0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-109B-051415			MRC-MW-21B-051415		
SDG: 2071034	LAB_ID	1513939001			2071034006		
FRACTION: MISC	SAMP_DATE	5/14/2015			5/14/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			MG/L		
	PCT_SOLIDS	100.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY					43		
AMMONIA					0.11	U	A
CHLORIDE					74.1		
DISSOLVED ORGANIC CARBON					0.38	J	P
NITRATE-N					0.092	U	
NITRITE-N					0.11	U	
ORTHOPHOSPHATE					0.0025	U	
PERCHLORATE		0.88					
SULFATE					2	J	P
TOTAL DISSOLVED SOLIDS					180		

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034001** Date Collected: 5/14/2015 00:00 Matrix: Water

Sample ID: **TB-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	7.5J	J	ug/L	10.0	3.1	SW846 8260C		5/20/15 01:45	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 01:45	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 01:45	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 01:45	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 01:45	CJG	A
Bromomethane	0.39J	J	ug/L	1.0	0.39	SW846 8260C		5/20/15 01:45	CJG	A
2-Butanone	6.9J	J	ug/L	10.0	1.8	SW846 8260C		5/20/15 01:45	CJG	A
Carbon Disulfide	0.29J	J	ug/L	1.0	0.23	SW846 8260C		5/20/15 01:45	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 01:45	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 01:45	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 01:45	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/20/15 01:45	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 01:45	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 01:45	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 01:45	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 01:45	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 01:45	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 01:45	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 01:45	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 01:45	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 01:45	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 01:45	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 01:45	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 01:45	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 01:45	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 01:45	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 01:45	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 01:45	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 01:45	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 01:45	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 01:45	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 01:45	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 01:45	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 01:45	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034001** Date Collected: 5/14/2015 00:00 Matrix: Water

Sample ID: **TB-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/20/15 01:45	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 01:45	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 01:45	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 01:45	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/20/15 01:45	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 01:45	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/20/15 01:45	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/20/15 01:45	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 01:45	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 01:45	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 01:45	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 01:45	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/20/15 01:45	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260C		5/20/15 01:45	CJG	A
4-Bromofluorobenzene (S)	95.1		%	79 - 114	SW846 8260C		5/20/15 01:45	CJG	A
Dibromofluoromethane (S)	97		%	78 - 116	SW846 8260C		5/20/15 01:45	CJG	A
Toluene-d8 (S)	95.8		%	76 - 127	SW846 8260C		5/20/15 01:45	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034002** Date Collected: 5/14/2015 09:10 Matrix: Water

Sample ID: **MRC-MW-93A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	4.4J	J	ug/L	10.0	3.1	SW846 8260C		5/20/15 02:02	CJG	C
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:02	CJG	C
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:02	CJG	C
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:02	CJG	C
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 02:02	CJG	C
Bromomethane	0.40J	J	ug/L	1.0	0.39	SW846 8260C		5/20/15 02:02	CJG	C
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/20/15 02:02	CJG	C
Carbon Disulfide	0.25J	J	ug/L	1.0	0.23	SW846 8260C		5/20/15 02:02	CJG	C
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:02	CJG	C
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 02:02	CJG	C
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 02:02	CJG	C
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:02	CJG	C
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/20/15 02:02	CJG	C
Chloromethane	0.39J	J	ug/L	1.0	0.31	SW846 8260C		5/20/15 02:02	CJG	C
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:02	CJG	C
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 02:02	CJG	C
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:02	CJG	C
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 02:02	CJG	C
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 02:02	CJG	C
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:02	CJG	C
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:02	CJG	C
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:02	CJG	C
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:02	CJG	C
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:02	CJG	C
cis-1,2-Dichloroethene	2.1		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:02	CJG	C
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:02	CJG	C
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:02	CJG	C
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:02	CJG	C
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:02	CJG	C
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 02:02	CJG	C
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 02:02	CJG	C
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:02	CJG	C
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 02:02	CJG	C
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 02:02	CJG	C
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 02:02	CJG	C
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 02:02	CJG	C

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034002** Date Collected: 5/14/2015 09:10 Matrix: Water

Sample ID: **MRC-MW-93A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:02	CJG	C
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/20/15 02:02	CJG	C
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/20/15 02:02	CJG	C
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:02	CJG	C
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/20/15 02:02	CJG	C
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/20/15 02:02	CJG	C
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/20/15 02:02	CJG	C
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/20/15 02:02	CJG	C
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/20/15 02:02	CJG	C
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/20/15 02:02	CJG	C
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:02	CJG	C
Trichloroethene	2.9		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:02	CJG	C
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:02	CJG	C
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/20/15 02:02	CJG	C
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:02	CJG	C
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/20/15 02:02	CJG	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260C			5/20/15 02:02	CJG	C
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260C			5/20/15 02:02	CJG	C
Dibromofluoromethane (S)	96.6		%	78 - 116	SW846 8260C			5/20/15 02:02	CJG	C
Toluene-d8 (S)	94.5		%	76 - 127	SW846 8260C			5/20/15 02:02	CJG	C

METALS

Antimony, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Arsenic, Total	0.041		mg/L	0.0030	0.0010	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Barium, Total	1.3		mg/L	0.056	0.019	SW846 6020A	5/18/15	AAM	5/19/15 11:32	MO	A1
Beryllium, Total	0.074		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Cadmium, Total	0.0053		mg/L	0.0011	0.00037	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Chromium, Total	0.18		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Cobalt, Total	5.3		mg/L	0.056	0.019	SW846 6020A	5/18/15	AAM	5/19/15 11:32	MO	A1
Copper, Total	0.30		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Iron, Total	236		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:12	SRT	A2
Lead, Total	0.086		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Manganese, Total	11.5		mg/L	0.056	0.019	SW846 6020A	5/18/15	AAM	5/19/15 11:32	MO	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 14:42	MNP	A3
Molybdenum, Total	0.015		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Nickel, Total	5.6		mg/L	0.056	0.019	SW846 6020A	5/18/15	AAM	5/19/15 11:32	MO	A1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034002** Date Collected: 5/14/2015 09:10 Matrix: Water

Sample ID: **MRC-MW-93A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Thallium, Total	0.00082J	J	mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1
Vanadium, Total	0.13		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:12	MO	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034003** Date Collected: 5/14/2015 10:15 Matrix: Water

Sample ID: **MRC-MW-115A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/20/15 02:19	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:19	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:19	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:19	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 02:19	CJG	B
Bromomethane	0.44J	J	ug/L	1.0	0.39	SW846 8260C		5/20/15 02:19	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/20/15 02:19	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:19	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:19	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 02:19	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 02:19	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/20/15 02:19	CJG	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:19	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:19	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 02:19	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:19	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 02:19	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 02:19	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:19	CJG	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:19	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:19	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:19	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:19	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:19	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:19	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:19	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:19	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 02:19	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 02:19	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:19	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 02:19	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 02:19	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 02:19	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 02:19	CJG	B

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034003** Date Collected: 5/14/2015 10:15 Matrix: Water

Sample ID: **MRC-MW-115A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/20/15 02:19	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 02:19	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:19	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 02:19	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/20/15 02:19	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:19	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/20/15 02:19	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/20/15 02:19	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 02:19	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:19	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 02:19	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:19	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/20/15 02:19	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260C		5/20/15 02:19	CJG	B
4-Bromofluorobenzene (S)	91.1		%	79 - 114	SW846 8260C		5/20/15 02:19	CJG	B
Dibromofluoromethane (S)	96		%	78 - 116	SW846 8260C		5/20/15 02:19	CJG	B
Toluene-d8 (S)	92.7		%	76 - 127	SW846 8260C		5/20/15 02:19	CJG	B

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034004** Date Collected: 5/14/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-21A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/20/15 02:36	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:36	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:36	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:36	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 02:36	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/20/15 02:36	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/20/15 02:36	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:36	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:36	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 02:36	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 02:36	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:36	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/20/15 02:36	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:36	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:36	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 02:36	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:36	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 02:36	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 02:36	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:36	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:36	CJG	A
1,1-Dichloroethane	2.1		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:36	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:36	CJG	A
1,1-Dichloroethene	1.8		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:36	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:36	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:36	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:36	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:36	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:36	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 02:36	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 02:36	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:36	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 02:36	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/20/15 02:36	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 02:36	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 02:36	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034004** Date Collected: 5/14/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-21A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:36	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/20/15 02:36	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/20/15 02:36	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:36	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/20/15 02:36	CJG	A
Tetrachloroethene	0.37J	J	ug/L	1.0	0.35	SW846 8260C			5/20/15 02:36	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/20/15 02:36	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/20/15 02:36	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/20/15 02:36	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/20/15 02:36	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:36	CJG	A
Trichloroethene	1.7		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:36	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:36	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/20/15 02:36	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:36	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/20/15 02:36	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.9		%	62 - 133		SW846 8260C			5/20/15 02:36	CJG	A
4-Bromofluorobenzene (S)	90.3		%	79 - 114		SW846 8260C			5/20/15 02:36	CJG	A
Dibromofluoromethane (S)	94.3		%	78 - 116		SW846 8260C			5/20/15 02:36	CJG	A
Toluene-d8 (S)	91.9		%	76 - 127		SW846 8260C			5/20/15 02:36	CJG	A
SEMIVOLATILES											
1,4-Dioxane	1.5		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 16:07	GEC	F1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.8		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 16:07	GEC	F1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Arsenic, Total	0.0027J	J	mg/L	0.0030	0.0010	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Barium, Total	0.053		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Beryllium, Total	0.00054J	J	mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Chromium, Total	0.0042		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Cobalt, Total	0.0059		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Copper, Total	0.0042J	J	mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Iron, Total	5.7		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:24	SRT	D2
Lead, Total	0.0014J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034004** Date Collected: 5/14/2015 12:10 Matrix: Water

Sample ID: **MRC-MW-21A-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	0.74		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 15:20	MNP	D3
Molybdenum, Total	0.00093J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Nickel, Total	0.0069		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1
Vanadium, Total	0.0051		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:16	MO	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034005** Date Collected: 5/14/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP07-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Barium, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Beryllium, Total	0.00068J	J	mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Cobalt, Total	0.081		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Iron, Total	30.3		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:27	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Manganese, Total	3.4		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 15:21	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Nickel, Total	0.084		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:20	MO	A1

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ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034006** Date Collected: 5/14/2015 14:05 Matrix: Water

Sample ID: **MRC-MW-21B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/20/15 02:53	CJG	A
Benzene	29.5		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:53	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:53	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:53	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 02:53	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/20/15 02:53	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/20/15 02:53	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 02:53	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:53	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 02:53	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 02:53	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:53	CJG	A
Chloroform	0.35J	J	ug/L	1.0	0.21	SW846 8260C		5/20/15 02:53	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:53	CJG	A
Cyclohexane	1.1		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:53	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 02:53	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:53	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 02:53	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 02:53	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 02:53	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 02:53	CJG	A
1,1-Dichloroethane	15.9		ug/L	1.0	0.28	SW846 8260C		5/20/15 02:53	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:53	CJG	A
1,1-Dichloroethene	195		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:53	CJG	A
cis-1,2-Dichloroethene	7.2		ug/L	1.0	0.32	SW846 8260C		5/20/15 02:53	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:53	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 02:53	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 02:53	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 02:53	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 02:53	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 02:53	CJG	A
Freon 113	1.1		ug/L	1.0	0.26	SW846 8260C		5/20/15 02:53	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 02:53	CJG	A
Isopropylbenzene	14.0		ug/L	1.0	0.22	SW846 8260C		5/20/15 02:53	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 02:53	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 02:53	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034006** Date Collected: 5/14/2015 14:05 Matrix: Water

Sample ID: **MRC-MW-21B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:53	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/20/15 02:53	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/20/15 02:53	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:53	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/20/15 02:53	CJG	A
Tetrachloroethene	8.4		ug/L	1.0	0.35	SW846 8260C			5/20/15 02:53	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/20/15 02:53	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/20/15 02:53	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/20/15 02:53	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/20/15 02:53	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:53	CJG	A
Trichloroethene	708		ug/L	20.0	6.6	SW846 8260C			5/22/15 05:16	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 02:53	CJG	A
Vinyl Chloride	0.76J	J	ug/L	1.0	0.30	SW846 8260C			5/20/15 02:53	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 02:53	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/20/15 02:53	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.6		%	62 - 133		SW846 8260C			5/20/15 02:53	CJG	A
1,2-Dichloroethane-d4 (S)	102		%	62 - 133		SW846 8260C			5/22/15 05:16	CJG	B
4-Bromofluorobenzene (S)	88.5		%	79 - 114		SW846 8260C			5/22/15 05:16	CJG	B
4-Bromofluorobenzene (S)	104		%	79 - 114		SW846 8260C			5/20/15 02:53	CJG	A
Dibromofluoromethane (S)	91.2		%	78 - 116		SW846 8260C			5/20/15 02:53	CJG	A
Dibromofluoromethane (S)	94.7		%	78 - 116		SW846 8260C			5/22/15 05:16	CJG	B
Toluene-d8 (S)	92.4		%	76 - 127		SW846 8260C			5/22/15 05:16	CJG	B
Toluene-d8 (S)	97.3		%	76 - 127		SW846 8260C			5/20/15 02:53	CJG	A
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			5/21/15 11:24	KJH	I
Ethene	ND		ug/L	2.4	0.40	RSK 175			5/21/15 11:24	KJH	I
Methane	16.8		ug/L	1.5	0.34	RSK 175			5/21/15 11:24	KJH	I
SEMIVOLATILES											
1,4-Dioxane	47.1		ug/L	1.4	0.28	EPA 522	5/30/15	KMR	5/31/15 10:06	CGS	M1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	78		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 16:32	GEC	M1
1,4-Dioxane-d8 (S)	85.4		%	70 - 130		EPA 522	5/30/15	KMR	5/31/15 10:06	CGS	M1
WET CHEMISTRY											
Alkalinity, Total	43		mg/L	5	0.8	S2320B-97			5/15/15 11:19	MBW	F

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034006** Date Collected: 5/14/2015 14:05 Matrix: Water

Sample ID: **MRC-MW-21B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Ammonia-nitrogen, Total	0.11		mg/L	0.10	0.04	S4500NH3D	5/19/15	J1H	5/20/15 06:29	J1H	G
Chloride	74.1		mg/L	5.0	0.31	EPA 300.0			5/15/15 03:30	SSL	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			5/15/15 03:30	SSL	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			5/15/15 03:30	SSL	H
Orthophosphate	ND		mg/L	0.020	0.0025	EPA 365.3			5/15/15 05:20	MBW	H
Sulfate	2.0J	J	mg/L	5.0	0.32	EPA 300.0			5/15/15 03:30	SSL	H
Total Dissolved Solids	180		mg/L	5	5	S2540C-11			5/16/15 12:11	ARK	H
Total Organic Carbon-Dissolved	0.38J	J	mg/L	1.0	0.16	SW846 9060A			5/20/14 13:04	PAG	L
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Barium, Total	0.10		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Beryllium, Total	0.00067J	J	mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Cobalt, Total	0.081		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Iron, Total	29.2		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:31	SRT	D2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Manganese, Total	3.4		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 15:22	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Nickel, Total	0.083		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:24	MO	D1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034007** Date Collected: 5/14/2015 14:01 Matrix: Water

Sample ID: **MRC-MW-109B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	20.9		ug/L	10.0	3.1	SW846 8260C		5/20/15 03:11	CJG	A
Benzene	123		ug/L	1.0	0.23	SW846 8260C		5/20/15 03:11	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 03:11	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 03:11	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/20/15 03:11	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/20/15 03:11	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/20/15 03:11	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/20/15 03:11	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 03:11	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/20/15 03:11	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/20/15 03:11	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 03:11	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/20/15 03:11	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 03:11	CJG	A
Cyclohexane	1.9		ug/L	1.0	0.29	SW846 8260C		5/20/15 03:11	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/20/15 03:11	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 03:11	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/20/15 03:11	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/20/15 03:11	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/20/15 03:11	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/20/15 03:11	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/20/15 03:11	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/20/15 03:11	CJG	A
1,1-Dichloroethene	2.2		ug/L	1.0	0.29	SW846 8260C		5/20/15 03:11	CJG	A
cis-1,2-Dichloroethene	302		ug/L	10.0	3.2	SW846 8260C		5/22/15 05:34	CJG	B
trans-1,2-Dichloroethene	28.8		ug/L	1.0	0.26	SW846 8260C		5/20/15 03:11	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/20/15 03:11	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/20/15 03:11	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/20/15 03:11	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/20/15 03:11	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/20/15 03:11	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/20/15 03:11	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/20/15 03:11	CJG	A
Isopropylbenzene	1.9		ug/L	1.0	0.22	SW846 8260C		5/20/15 03:11	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/20/15 03:11	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/20/15 03:11	CJG	A

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034007** Date Collected: 5/14/2015 14:01 Matrix: Water

Sample ID: **MRC-MW-109B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	11.2		ug/L	1.0	0.33	SW846 8260C			5/20/15 03:11	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/20/15 03:11	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/20/15 03:11	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 03:11	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/20/15 03:11	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/20/15 03:11	CJG	A
Toluene	0.33J	J	ug/L	1.0	0.23	SW846 8260C			5/20/15 03:11	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/20/15 03:11	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/20/15 03:11	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/20/15 03:11	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/20/15 03:11	CJG	A
Trichloroethene	87.2		ug/L	1.0	0.33	SW846 8260C			5/20/15 03:11	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/20/15 03:11	CJG	A
Vinyl Chloride	19.1		ug/L	1.0	0.30	SW846 8260C			5/20/15 03:11	CJG	A
o-Xylene	6.5		ug/L	1.0	0.33	SW846 8260C			5/20/15 03:11	CJG	A
mp-Xylene	0.64J	J	ug/L	2.0	0.52	SW846 8260C			5/20/15 03:11	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133		SW846 8260C			5/20/15 03:11	CJG	A
1,2-Dichloroethane-d4 (S)	97.9		%	62 - 133		SW846 8260C			5/22/15 05:34	CJG	B
4-Bromofluorobenzene (S)	86.9		%	79 - 114		SW846 8260C			5/22/15 05:34	CJG	B
4-Bromofluorobenzene (S)	93.1		%	79 - 114		SW846 8260C			5/20/15 03:11	CJG	A
Dibromofluoromethane (S)	91.9		%	78 - 116		SW846 8260C			5/22/15 05:34	CJG	B
Dibromofluoromethane (S)	92.1		%	78 - 116		SW846 8260C			5/20/15 03:11	CJG	A
Toluene-d8 (S)	98.2		%	76 - 127		SW846 8260C			5/20/15 03:11	CJG	A
Toluene-d8 (S)	92.5		%	76 - 127		SW846 8260C			5/22/15 05:34	CJG	B
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Barium, Total	0.39		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Beryllium, Total	0.012		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Cadmium, Total	0.0012		mg/L	0.0011	0.00037	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Chromium, Total	0.0012J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Cobalt, Total	0.97		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Copper, Total	0.030		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Iron, Total	0.39		mg/L	0.067	0.022	SW846 6010C	5/19/15	AAM	5/20/15 11:35	SRT	D2
Lead, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Manganese, Total	3.4		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071034 TMM034|112IC06247

Lab ID: **2071034007** Date Collected: 5/14/2015 14:01 Matrix: Water

Sample ID: **MRC-MW-109B-051415** Date Received: 5/14/2015 19:50

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/21/15	MNP	5/21/15 15:25	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Nickel, Total	1.2		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
Vanadium, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	5/18/15	AAM	5/19/15 10:28	MO	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/26/15 12:53	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1513939
Client: ALS Environmental
Project Manage Kevin W. Griffiths

Analytical Results

Sample ID: 2071034007(MRCMW109B051415)
Lab ID: 1513939001
Matrix: Water
Sampling Site: NA
Media: 250 mL Nalgene
Sampling Parameter: NA
Collected: 05/14/2015
Received: 05/19/2015

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water
Batch: ELMS/1567 (HBN: 149278)
Analyzed: 05/26/2015 12:53
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	MDL (ug/L)	RL (ug/L)	Dilution	Qual
Perchlorate	**0.88**	0.060	0.20	1	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/27/2015 15:05	/S/ Thomas T. McKay 06/01/2015 14:06

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-034

Sample Management

This report contains the results of the analysis of seven (7) water samples collected on May 14, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 14, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

One (1) sample was subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Six (6) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2180033, bromomethane was detected at 0.51J µg/L; carbon disulfide was detected at 0.39J µg/L; 1,4-dichlorobenzene was detected at 0.31J µg/L.
- In 2181443, chlorobenzene was detected at 0.25J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Two (2) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Light Hydrocarbon Gases by RSK-175

Sample Handling. One (1) water sample was submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2181089, was prepared from project sample MRC-MW-21B-051415 (2071034006). Target analytes were detected as follows:

- Methane was detected at 16.8 µg/L in the sample and at 18.3 µg/L in the duplicate sample with a %RPD of 8.5%.

Total Metals by SW-846 Method 6020A

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was not prepared on a sample in this deliverable group.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike and matrix spike duplicate identified as 2179724 and 2179725 were prepared and analyzed on sample 2071034002 (MRC-MW-93A-051415), in this deliverable group. All MS/MSD recoveries and their associated RPDs were within method control limits, except the following;

- The iron analyte concentration in the sample were greater than four times the concentration of our spiking solution. For this reason, spike recoveries were not calculated (NSC).

Total Mercury in Water by EPA Method 7470A

Sample handling. Five (5) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2071034006 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. One (1) aqueous sample was analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The sample was distilled and analyzed within the 28-day holding time established for the method.

Calibration. An initial calibration was properly established on the day of analysis, and a second source standard was analyzed throughout the analysis to verify the calibration. The recoveries were within the QC limits.

Blank. A preparation blank, identified as 2179819, was distilled and analyzed with the sample. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. A laboratory control sample, identified as 2179820, was distilled and analyzed with the sample. The recovery was within QC limits.

Anions by EPA 300.0

Sample handling. One (1) aqueous sample was analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The sample was run within method recommended holding time for each analyte.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limit.

Blanks. Initial and continuing blanks were analyzed with the samples. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2178252 and SSL, were analyzed initially and every 20 samples. Recoveries were within the QC limits.

Dissolved Total Organic Carbon by SW-846 9060A

Sample handling. One (1) aqueous sample was analyzed for dissolved total organic carbon by SW-846 Method 9060A. The sample was analyzed within the 28-day holding time established for the method.

Calibration. On the day of analysis, a four-point low curve calibration was properly established, and initial and continuing calibration standards were analyzed throughout the run. The recoveries were all within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Total organic carbon was not detected above the reporting limit in the blanks.

A dissolved TOC blank, identified as DISS. BLANK, was analyzed with the sample. Dissolved total organic carbon was not detected above the reporting limit in the blank.

Laboratory Control Samples. A dissolved TOC laboratory control sample, identified as 5.0 QC DISS., was analyzed with the samples. The recovery was within the QC limits.

Orthophosphate by EPA 365.3

Sample handling. One (1) aqueous sample was analyzed for orthophosphate by EPA Method 365.3. The sample was analyzed within the hold time established for the method.

Calibration. An initial calibration was established. Initial and continuing calibration verification standards were analyzed on the day of analysis to verify the calibration. All recoveries were within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the sample. Orthophosphate was not detected above the reporting limit in the blanks.

Total Alkalinity by SM 2320B

Sample handling. One (1) aqueous sample was analyzed for total alkalinity by Standard Method 2320B. The sample was analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the sample. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

Total Dissolved Solids by SM2540C

Sample handling. One (1) aqueous sample was analyzed for total dissolved solids by Standard Method 2540C. The sample was analyzed within the 7-day holding time established for the method.

Blank. A preparation blank, identified as 2178727, was analyzed with the sample. Total dissolved solids were not detected above the reporting limit in the blank.

Laboratory Control Sample. A laboratory control sample, identified as 2178728, was analyzed with the samples. The recovery was within the QC limits.

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1513939

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1567 (149278)

General Set Information: There were five field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 448332) was less than 1/2 the CRDL. The recovery for the LCS (448333) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1513562001 (Client ID: 2070699 008). The percent recoveries and the relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 26MAYP-02/03/11/13/16.

Thomas Bosch — June 1, 2015
Thomas Bosch — Date

DJM

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE _

* 2 0 7 1 0 3 4 *

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Aparavage	Report CC:
Company/Address: Tetra Tech	
20251 Century Blvd. Ste. 200	
Germantown, MD 20874	
Phone #: 301-528-3000	Email: tony.aparavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Con

PRESERVATIVE: 1 7 0 0 3 2 0 8 1

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs • 8260 • 624 • OLP	GC/MS SVOAs • 8270 • 625	GC VOAs • 8021 • 8015	PESTICIDES • 8081 • 608	PCBs • 8082 • 608	METALS: TOTAL (List in comments below)	METALS: DISSOLVED (List in comments below)	DOC	MEE (RSK-175)	REMARKS/ ALTERNATE DESCRIPTION
TB-051415		5/14/15	—	AQ	2	X									
MRC-MW-93A-051415			0910		4	X					X				
MRC-MW-115A-051415			1015		3	X									
MRC-MW-21A-051415			1210		5	X	X				X				
MRC-MW-DUP07-051415			—		1						X				DUPLICATE
MRC-MW-21B-051415			1405		12	X	X	—	X	X	X	X	X	X	
MRC-MW-109B-051415			1401		5	X	—	X			X				

5/14/15

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?		✓	

Cooler Temp: ____ °C

Cooler #:

Therm ID: 1

Ship Carrier: FedEx UPS DHL

Tracking #:

Edata ___Yes ___No

SPECIAL INSTRUCTIONS/COMMENTS

Metals

★ SEE SLOPE FOR FULL METALS LIST

★ 48 HR HOLD TIME FOR NO_3,NO_2 Sample

★ ALL SAMPLES GO TO MIDDLETOWN, PA LAB

See QAPP ☐

TURNAROUND REQUIREMENTS

___ RUSH (SURCHARGES APPLY)

___ 1 day ___ 2 day ___ 3 day

___ 4 day ___ 5 day

STANDARD

REQUESTED REPORT DATE

REPORT

___ I. Results C

___ II. Results + (LCS, DUP,

___ III. Results + Summaries

___ IV. Data Va

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature:	Signature:	Signature:	Signature:	Signature:	Signature: Sam Schmitt
Printed Name: Josh Mullis	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name:	Printed Name:	Printed Name:
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 5/14/15 1640	Date/Time: 5/14/15 1655	Date/Time: 5/14/15	Date/Time: 5/14 1842	Date/Time: 5/14 1950	Date/Time: 5/14 1950

Distribution: White - Lab Copy; Yellow - Return to Originator

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VMG 05115115 0645

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-034

Lab File ID: 15051950.D BFB Injection Date: 5/19/2015

Instrument ID: ms15.i BFB Injection Time: 17:56

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	48.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	92.7
175	5.0 - 9.0% of mass 174	6.6 (7.1) 1
176	95.0 - 101.0% of mass 174	88.4 (95.3) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15051953.D	5/19/2015	18:52
1234	1234	15051954.D	5/19/2015	19:10
1235	1235	15051955.D	5/19/2015	19:27
1236	1236	15051956.D	5/19/2015	19:44
1237	1237	15051957.D	5/19/2015	20:01
1238	1238	15051958.D	5/19/2015	20:18
1239	1239	15051959.D	5/19/2015	20:35
2180033(MB)	2180033	15051963.D	5/19/2015	21:44
2180034(LCS)	2180034	15051964.D	5/19/2015	22:01
TB-051415	2071034001	15051977.D	5/20/2015	01:45
MRC-MW-93A-051415	2071034002	15051978.D	5/20/2015	02:02
MRC-MW-115A-051415	2071034003	15051979.D	5/20/2015	02:19
MRC-MW-21A-051415	2071034004	15051980.D	5/20/2015	02:36
MRC-MW-21B-051415	2071034006	15051981.D	5/20/2015	02:53
MRC-MW-109B-051415	2071034007	15051982.D	5/20/2015	03:11

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-034

Lab File ID: 15052150.D BFB Injection Date: 5/21/2015

Instrument ID: ms15.i BFB Injection Time: 19:16

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.6
75	30.0 - 60.0% of mass 95	46.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	79.2
175	5.0 - 9.0% of mass 174	5.9 (7.4) 1
176	95.0 - 101.0% of mass 174	75.4 (95.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.6) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15052152.D	5/21/2015	19:52
2181443(MB)	2181443	15052155.D	5/21/2015	20:59
2181444(LCS)	2181444	15052156.D	5/21/2015	21:16
MRC-MW-21B-051415-DL20	2071034006	15052184.D	5/22/2015	05:16
MRC-MW-109B-051415-DL10	2071034007	15052185.D	5/22/2015	05:34

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3115	12365	49853	134143	276003	L
Acrolein	0.02972	0.02957	0.02954	0.03038	0.03047	A
Acrylonitrile	0.08488	0.07199	0.07861	0.08049	0.07933	A
Acetonitrile	4425	17844	69326	188478	300736	Q
tert-Amyl Ethylether	9358	51721	251711	711597	1608239	L
tert-Amyl methyl ether	0.51419	0.50109	0.59173	0.61758	0.65041	A
tert-Amyl Alcohol	1545	9368	37420	112845	250393	L
Benzene	1.27694	1.26732	1.28484	1.24368	1.22049	A
Benzyl Chloride	834	6192	33005	118018	312515	Q
Bromobenzene	0.84079	0.89661	0.98859	0.97450	0.97760	A
Bromochloromethane	0.22690	0.20281	0.19716	0.19395	0.18988	A
Bromodichloromethane	0.39608	0.38566	0.41380	0.43297	0.44872	A
Bromoform *	0.44206	0.36305	0.40163	0.44578	0.48867	A
Bromomethane	9332	38368	134592	299912	612357	L
2-Butanone	0.03548	0.03196	0.03110	0.03238	0.03596	A
tert.- Butyl Alcohol	0.01799	0.01738	0.01766	0.01849	0.01911	A
tert-Butylbenzene	4210	35724	204082	583061	1226871	L
n-Butylbenzene	4251	32375	204916	604515	1292790	L
sec-Butylbenzene	21334	179122	1024862	2860265	6050064	L
Carbon Disulfide	0.56794	0.50611	0.52190	0.57244	0.60701	A
Carbon Tetrachloride	0.48107	0.46186	0.48045	0.49463	0.48833	A
Chloroacetonitrile	690	3291	19445	55845	120463	L
Chlorobenzene *	2.63237	2.44519	2.41629	2.36315	2.35133	A
1-Chlorobutane	0.24916	0.25336	0.25827	0.25773	0.25037	A
Chlorodibromomethane	0.72274	0.69932	0.75810	0.83913	0.89607	A
Chloroethane	0.23312	0.19132	0.16812	0.16680	0.16982	A
2-Chloroethylvinyl ether		194	1147	4150	11064	L
Chloroform **	34082	120948	452230	1131734	2282175	L
1-Chlorohexane	7140	42958	231416	685474	1494181	L
Chloromethane *	0.42756	0.36516	0.34107	0.32891	0.32587	A
Chloroprene	0.39427	0.37519	0.40739	0.42355	0.42113	A
3-Chloro-1-propene	7451	30544	131378	347064	731586	L
o-Chlorotoluene	1.96066	2.19002	2.58690	2.64845	2.72309	A
p-Chlorotoluene	1.80202	1.96606	2.39720	2.46143	2.52331	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.39402	0.39397	0.44707	0.45794	0.44351	A
1,2-Dibromo-3-Chloropropane	0.12788	0.08870	0.09907	0.11046	0.12063	A
1,2-Dibromoethane	0.66563	0.64093	0.64736	0.67777	0.70891	A
Dibromomethane	0.23730	0.20183	0.20358	0.20070	0.20138	A
trans-1,4-Dichloro-2-butene	1285	7217	43883	129597	282167	L
1,2-Dichlorobenzene	1.70345	1.61897	1.73793	1.73861	1.76151	A
1,3-Dichlorobenzene	1.75375	1.77202	1.86616	1.81477	1.83107	A
1,4-Dichlorobenzene	1.99683	1.87531	1.90039	1.84388	1.84730	A
Dichlorodifluoromethane	0.64565	0.58608	0.54864	0.53746	0.51846	A
1,1-Dichloroethane *	0.61713	0.52204	0.53544	0.52066	0.51047	A
1,2-Dichloroethene, Total	22475	114510	468065	1225791	2559299	L
1,2-Dichloroethane	0.52285	0.46098	0.45963	0.44240	0.43717	A
1,1-Dichloroethene **	0.42133	0.35430	0.34750	0.34640	0.34301	A
cis-1,2-Dichloroethene	0.41312	0.38834	0.38995	0.39209	0.39475	A
trans-1,2-Dichloroethene	0.36877	0.33961	0.32180	0.31488	0.31358	A
Dichlorofluoromethane	0.57486	0.52133	0.48741	0.48687	0.48296	A
1,1-Dichloro-2-Propanone	353	3518	17184	51582	110723	L
2,2-Dichloropropane	0.40606	0.37876	0.38145	0.39192	0.40443	A
1,3-Dichloropropane	1.17048	1.08399	1.09515	1.11269	1.14500	A
1,2-Dichloropropane **	0.28120	0.26864	0.27794	0.27934	0.27981	A
1,1-Dichloropropene	0.39190	0.41076	0.43693	0.44204	0.43620	A
cis-1,3-Dichloropropene	9239	49640	252858	761321	1735847	Q
trans-1,3-Dichloropropene	7210	45092	247474	714181	1582448	L
1,3-Dichloropropene, Total	16449	94732	500332	1475502	3318295	L
Diisobutylene	36774	101793	373036	970158	2018678	L
Diisopropyl ether	0.72247	0.60878	0.63018	0.65152	0.66260	A
1,4-Dioxane	1783	9356	48744	146938	318038	L
Ethyl Acetate	0.19534	0.17045	0.18467	0.19081	0.19355	A
Ethyl ether	0.15565	0.13953	0.13942	0.14466	0.14833	A
Ethyl Methacrylate	5813	36086	202648	620998	1361074	L
Ethyl tert-butyl ether	0.66750	0.63733	0.66933	0.69588	0.72425	A
Ethylbenzene **	0.96455	1.10340	1.19698	1.21734	1.21229	A
Freon 113	0.27967	0.27761	0.26271	0.25516	0.24774	A
Heptane	3131	22409	114774	328083	697579	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.50552	0.49797	0.52502	0.53916	0.55995	A
Hexachloroethane	0.42339	0.39473	0.46635	0.51053	0.55168	A
Hexane	0.36936	0.33531	0.33149	0.33576	0.33848	A
2-Hexanone	12603	72834	411611	1207505	2501925	L
Iodomethane	1499	8057	62527	248183	586024	L
Isobutyl alcohol	2681	13208	77882	226490	483970	L
Isopropyl Alcohol	2560	8009	28472	84066	180476	L
Isopropylbenzene	24097	163674	940868	2729302	5870170	L
p-Isopropyltoluene	4573	37518	233101	682067	1449054	L
Methyl acetate	1266	6346	23518	65043	133312	L
Methyl acrylate	0.17186	0.18016	0.20137	0.21049	0.21701	A
Methacrylonitrile	3257	17132	77797	193734	414159	L
Methyl cyclohexane	0.99997	0.95124	1.07710	1.12481	1.10934	A
Methyl methacrylate	3682	17866	92060	279510	645683	L
Methyl t-Butyl Ether	0.73966	0.62343	0.60801	0.62341	0.64108	A
4-Methyl-2-Pentanone(MIBK)	0.33818	0.35562	0.42467	0.46078	0.45541	A
Methylene Chloride	15408	51231	187554	461123	950532	Q
Naphthalene	10062	58023	359528	1492388	3559426	Q
Nitrobenzene	2413	10052	48164	179911	531680	Q
2-Nitropropane	5832	27005	151017	486216	1081589	L
Octane	2424	14873	97745	285730	622364	L
Pentachloroethane	0.67422	0.58192	0.60263	0.61088	0.62574	A
Pentane	0.16375	0.14555	0.13161	0.12932	0.12887	A
n-Propanol	0.02151	0.01843	0.01833	0.01786	0.01728	A
Propionitrile	0.04100	0.03073	0.03237	0.03205	0.03099	A
n-Propylbenzene	6248	48257	281351	780924	1631648	L
Styrene	14324	101739	639631	1775739	3812796	L
1,1,1,2-Tetrachloroethane	0.89983	0.83502	0.84340	0.86031	0.88491	A
1,1,2,2-Tetrachloroethane *	0.89525	0.76352	0.75516	0.73621	0.73273	A
Tetrachloroethene	1.00831	0.94954	0.88261	0.82744	0.80475	A
Tetrahydrofuran	0.04942	0.04534	0.05120	0.05530	0.05439	A
Toluene **	1.62322	1.65959	1.90250	1.93951	1.94551	A
Total Xylenes	1.04318	1.15782	1.36349	1.46927	1.49842	A
1,2,3-Trichlorobenzene	7550	39360	249431	786071	1696605	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	8497	47878	266939	877655	2015776	Q
1,1,1-Trichloroethane	0.53276	0.52165	0.53572	0.54452	0.54066	A
1,1,2-Trichloroethane	0.66730	0.59094	0.55589	0.56002	0.54956	A
Trichloroethene	0.41302	0.36320	0.37141	0.35510	0.34478	A
Trichlorofluoromethane	0.76477	0.66376	0.64217	0.62206	0.60276	A
1,2,3-Trichloropropane	0.31186	0.28037	0.27851	0.26730	0.26207	A
1,2,4-Trimethylbenzene	18426	148574	882857	2445783	5240284	L
1,3,5-Trimethylbenzene	17038	146325	873939	2396302	5003116	L
Vinyl Acetate	0.05831	0.05205	0.05968	0.06404	0.06629	A
Vinyl Chloride **	0.30764	0.27842	0.27940	0.28800	0.29627	A
o-Xylene	10610	64845	352052	1041764	2292334	Q
mp-Xylene	1.07289	1.23784	1.42785	1.49798	1.50155	A
4-Bromofluorobenzene	11470	54248	250942	718955	1543783	L
Dibromofluoromethane	15431	60804	239097	618744	1257772	L
1,2-Dichloroethane-d4	19902	73503	257832	646948	1300148	L
Toluene-d8		155131	738419	1992340	4189344	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	588226			L	0.000000	63.630810		0.99960
Acrolein	0.03235	0.03366		A		0.030810		5.15925
Acrylonitrile	0.08190	0.08625		A		0.080490		5.81705
Acetonitrile	806781			Q	0.000000	0.015840	0.000170	0.99301
tert-Amyl Ethylether	3745020	5364		L	0.000000	2.050170		0.99401
tert-Amyl methyl ether	0.71213	0.50937		A		0.585210		13.83360
tert-Amyl Alcohol	598109	677		L	0.000000	64.506287		0.99230
Benzene	1.24626	1.45399		A		1.284790		6.05459
Benzyl Chloride				Q	0.000000	0.101190	0.025850	0.99981
Bromobenzene	0.98820	1.08785		A		0.964880		8.08784
Bromochloromethane	0.17759	0.24372		A		0.204570		11.19128
Bromodichloromethane	0.47525	0.35865		A		0.415870		9.55819
Bromoform *	0.53976	0.49603		A		0.453860		13.20382
Bromomethane	1350144			L	0.000000	5.577270		0.99819
2-Butanone	0.03315			A		0.033340		5.89231
tert.- Butyl Alcohol	0.02067			A		0.018550		6.52528
tert-Butylbenzene	2605843	2355		L	0.000000	1.351060		0.99977
n-Butylbenzene	2743613			L	0.000000	1.284400		0.99951
sec-Butylbenzene	12284888	10498		L	0.000000	0.283470		0.99965
Carbon Disulfide	0.65830	0.62657		A		0.580040		9.46046
Carbon Tetrachloride	0.50626	0.47001		A		0.483230		3.08130
Chloroacetonitrile	278576			L	0.000000	59.085529		0.99581
Chlorobenzene *	2.38884	2.99831		A		2.513640		9.29778
1-Chlorobutane	0.25255	0.32347		A		0.263560		10.10734
Chlorodibromomethane	0.95186	0.66969		A		0.790990		13.46837
Chloroethane	0.16347			A		0.182110		14.76712
2-Chloroethylvinyl ether	50806			L	0.749740	143		0.92638
Chloroform **	4662274	24493		L	0.000000	1.586400		0.99970
1-Chlorohexane	3290797	3247		L	0.000000	0.989980		0.99825
Chloromethane *	0.33724			A		0.354300		10.86143
Chloroprene	0.43544	0.48668		A		0.420520		8.42169
3-Chloro-1-propene	1478765	4279		L	0.000000	5.003750		0.99993
o-Chlorotoluene	2.74137	2.21018		A		2.437240		12.76798
p-Chlorotoluene	2.59094	2.08496		A		2.260850		13.57354
Cyclohexane	0.44042	0.42297		A		0.428560		6.01751
1,2-Dibromo-3-Chloropropane	0.13270	0.10828		A		0.112530		13.95394

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.73686	0.76998		A		0.692490		6.94497
Dibromomethane	0.21005	0.22589		A		0.211530		6.82275
trans-1,4-Dichloro-2-butene	639471	785		L	0.000000	5.601070		0.99738
1,2-Dichlorobenzene	1.79830	1.73935		A		1.728300		3.24700
1,3-Dichlorobenzene	1.85824	1.93292		A		1.832700		3.30825
1,4-Dichlorobenzene	1.84529	2.20493		A		1.930560		6.86371
Dichlorodifluoromethane	0.52613			A		0.560400		8.56753
1,1-Dichloroethane *		0.64618		A		0.558650		10.35265
1,2-Dichloroethene, Total	5479946	12653		L	0.000000	2.736730		0.99950
1,2-Dichloroethane	0.44077	0.49703		A		0.465830		6.94750
1,1-Dichloroethene **	0.35410	0.45973		A		0.375200		12.30473
cis-1,2-Dichloroethene	0.41278	0.42900		A		0.402860		3.85402
trans-1,2-Dichloroethene	0.32532	0.43867		A		0.346090		13.01861
Dichlorofluoromethane	0.50007	0.64268		A		0.528030		11.34755
1,1-Dichloro-2-Propanone	246176			L	0.000000	66.266380		0.99788
2,2-Dichloropropane	0.43097	0.46178		A		0.407910		7.25525
1,3-Dichloropropane	1.18329	1.18051		A		1.138730		3.64770
1,2-Dichloropropane **	0.29435	0.29549		A		0.282400		3.36185
1,1-Dichloropropene	0.44353	0.46809		A		0.432780		5.68599
cis-1,3-Dichloropropene	3902762	4845		Q	0.000000	1.000530	0.032870	0.99977
trans-1,3-Dichloropropene	3557487	3573		L	0.000000	0.920690		0.99721
1,3-Dichloropropene, Total	7460249	8418		L	0.000000	0.878820		0.99685
Diisobutylene	4231985	31147		L	0.000000	1.762380		0.99976
Diisopropyl ether	0.69067	0.76489		A		0.675870		8.02977
1,4-Dioxane	700477			L	0.000000	270		0.99753
Ethyl Acetate	0.20402	0.22733		A		0.195170		9.00974
Ethyl ether	0.15639	0.16629		A		0.150040		6.61628
Ethyl Methacrylate	3038972	2926		L	0.000000	1.075940		0.99745
Ethyl tert-butyl ether	0.76383	0.69316		A		0.693040		5.98172
Ethylbenzene **	1.22808	1.09998		A		1.146090		8.40516
Freon 113	0.24985	0.31887		A		0.270230		9.20786
Heptane	1458099	1200		L	0.000000	5.122110		0.99965
Hexachlorobutadiene	0.56546	0.65311		A		0.549460		9.51369
Hexachloroethane	0.58476	0.47466		A		0.486590		13.89578
Hexane	0.35532	0.33266		A		0.342620		4.15699
2-Hexanone	5485111	5540		L	0.000000	2.958700		0.99900

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1232633	810		L	0.000000	6.111500		0.99621
Isobutyl alcohol	1073380	2655		L	0.000000	70.581429		0.99774
Isopropyl Alcohol	402404			L	0.000000	94.261971		0.99720
Isopropylbenzene	12022709	13011		L	0.000000	0.290620		0.99966
p-Isopropyltoluene	3079857	2116		L	0.000000	1.144120		0.99962
Methyl acetate	281666	839		L	0.000000	26.521111		0.99977
Methyl acrylate	0.22777	0.20298		A		0.201660		9.80851
Methacrylonitrile	843127	1240		L	0.000000	8.794770		0.99989
Methyl cyclohexane	1.11775	0.81190		A		1.027440		11.22680
Methyl methacrylate	1435644	2004		L	0.000000	5.301240		0.99603
Methyl t-Butyl Ether	0.68991	0.81508		A		0.677230		11.26983
4-Methyl-2-Pentanone(MIBK)	0.46641	0.33182		A		0.404700		14.98581
Methylene Chloride	2023691	11567		Q	0.012800	0.251340	0.002870	0.99995
Naphthalene	8223079	5682		Q	0.000000	1.766300	0.087990	0.99898
Nitrobenzene	1631893	1449		Q	0.000000	0.015790	0.000460	0.99986
2-Nitropropane		2725		L	0.000000	7.253240		0.99573
Octane	1314597	694		L	0.000000	2.453770		0.99930
Pentachloroethane	0.66003	0.79144		A		0.649550		10.82930
Pentane	0.13226			A		0.138560		9.95122
n-Propanol	0.01684			A		0.018380		8.99559
Propionitrile	0.03225	0.03618		A		0.033650		10.99128
n-Propylbenzene	3449417	3178		L	0.000000	1.018900		0.99988
Styrene	8259279	7788		L	0.000000	0.428660		0.99934
1,1,1,2-Tetrachloroethane	0.92388	0.95758		A		0.886420		5.00815
1,1,2,2-Tetrachloroethane *	0.73899	0.94126		A		0.794730		10.83499
Tetrachloroethene	0.79875	1.13841		A		0.915690		13.68329
Tetrahydrofuran	0.05417			A		0.051640		7.35669
Toluene **	1.99234	1.87033		A		1.847570		7.91188
Total Xylenes	1.52811	1.17148		A		1.318820		14.66068
1,2,3-Trichlorobenzene	3728950	3363		Q	0.000000	0.945970	0.017820	0.99978
1,2,4-Trichlorobenzene	4486355	4585		Q	0.000000	1.072580	0.031500	0.99953
1,1,1-Trichloroethane	0.55389	0.67258		A		0.557400		9.28761
1,1,2-Trichloroethane	0.56540	0.58458		A		0.581950		6.96413
Trichloroethene	0.35167	0.43847		A		0.376810		9.35578
Trichlorofluoromethane	0.61275			A		0.651380		9.16288
1,2,3-Trichloropropane	0.26593	0.38029		A		0.292330		14.44028

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	11059386	10614		L	0.000000	0.318090		0.99977
1,3,5-Trimethylbenzene	10550634	9402		L	0.000000	0.332880		0.99990
Vinyl Acetate	0.06798	0.05767		A		0.060860		9.14644
Vinyl Chloride **	0.31640			A		0.294360		5.22809
o-Xylene	4941923	5433		Q	0.000000	1.395210	0.022360	0.99979
mp-Xylene	1.52119	1.26003		A		1.359910		12.63029
4-Bromofluorobenzene		7412		L	0.000000	1.092370		0.99922
Dibromofluoromethane				L	0.000000	2.854140		0.99964
1,2-Dichloroethane-d4	2701740			L	0.000000	2.748500		0.99972
Toluene-d8	8957805			L	0.053370	0.356160		0.99988

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.1	100.0	L
Acrolein	0.0308	0.0299			-2.9	100.0	A
Acrylonitrile	0.0805	0.0758			-5.9	100.0	A
Acetonitrile	250		237		-5.3	100.0	Q
tert-Amyl Ethylether	50.0000		38.9216		-22.2	100.0	L
tert-Amyl methyl ether	0.5852	0.5692			-2.7	100.0	A
tert-Amyl Alcohol	250		186		-25.4	100.0	L
Benzene	1.2848	1.2270			-4.5	100.0	A
Benzyl Chloride	50.0000		48.4471		-3.1	100.0	Q
Bromobenzene	0.9649	0.9320			-3.4	100.0	A
Bromochloromethane	0.2046	0.1768			-13.6	100.0	A
Bromodichloromethane	0.4159	0.4112			-1.1	100.0	A
Bromoform	0.4539	0.4125		0.100	-9.1	100.0	A
Bromomethane	50.0000		47.5694		-4.9	100.0	L
2-Butanone	0.0333	0.0294			-11.9	100.0	A
tert.- Butyl Alcohol	0.0185	0.0163			-12.0	100.0	A
tert-Butylbenzene	50.0000		47.7690		-4.5	100.0	L
n-Butylbenzene	50.0000		46.5102		-7.0	100.0	L
sec-Butylbenzene	50.0000		49.7133		-0.6	100.0	L
Carbon Disulfide	0.5800	0.5862			1.1	100.0	A
Carbon Tetrachloride	0.4832	0.4545			-5.9	100.0	A
Chloroacetonitrile	250		230		-8.0	100.0	L
Chlorobenzene	2.5136	2.3020		0.300	-8.4	100.0	A
1-Chlorobutane	0.2636	0.2586			-1.9	100.0	A
Chlorodibromomethane	0.7910	0.7796			-1.4	100.0	A
Chloroethane	0.1821	0.1734			-4.8	100.0	A
2-Chloroethylvinyl ether	50.0000		36.8015		-26.4	100.0	L
Chloroform	50.0000		49.1609		-1.7	20.0	L
1-Chlorohexane	50.0000		44.7149		-10.6	100.0	L
Chloromethane	0.3543	0.3290		0.100	-7.2	100.0	A
Chloroprene	0.4205	0.4052			-3.6	100.0	A
3-Chloro-1-propene	50.0000		52.2763		4.6	100.0	L
o-Chlorotoluene	2.4372	2.6468			8.6	100.0	A
p-Chlorotoluene	2.2608	2.4655			9.1	100.0	A
Cyclohexane	0.4286	0.4389			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1125	0.0994			-11.7	100.0	A
1,2-Dibromoethane	0.6925	0.6270			-9.5	100.0	A
Dibromomethane	0.2115	0.1885			-10.9	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		44.2129		-11.6	100.0	L
1,2-Dichlorobenzene	1.7283	1.6606			-3.9	100.0	A
1,3-Dichlorobenzene	1.8327	1.7582			-4.1	100.0	A
1,4-Dichlorobenzene	1.9306	1.7789			-7.9	100.0	A
Dichlorodifluoromethane	0.5604	0.4879			-12.9	100.0	A
1,1-Dichloroethane	0.5587	0.5026		0.100	-10.0	100.0	A
1,2-Dichloroethene, Total	100		93.1725		-6.8	100.0	L
1,2-Dichloroethane	0.4658	0.4173			-10.4	100.0	A
1,1-Dichloroethene	0.3752	0.3375			-10.1	20.0	A
cis-1,2-Dichloroethene	0.4029	0.3835			-4.8	100.0	A
trans-1,2-Dichloroethene	0.3461	0.3155			-8.8	100.0	A
Dichlorofluoromethane	0.5280	0.4763			-9.8	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.4079	0.3817			-6.4	100.0	A
1,3-Dichloropropane	1.1387	1.0885			-4.4	100.0	A
1,2-Dichloropropane	0.2824	0.2780			-1.5	20.0	A
1,1-Dichloropropene	0.4328	0.4237			-2.1	100.0	A
cis-1,3-Dichloropropene	50.0000		47.5647		-4.9	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.0680		-13.9	100.0	L
1,3-Dichloropropene, Total	100		90.6327		-9.4	100.0	L
Diisobutylene	50.0000		50.5871		1.2	100.0	L
Diisopropyl ether	0.6759	0.6197			-8.3	100.0	A
1,4-Dioxane	1250		1007		-19.5	100.0	L
Ethyl Acetate	0.1952	0.1834			-6.1	100.0	A
Ethyl ether	0.1500	0.1412			-5.9	100.0	A
Ethyl Methacrylate	50.0000		42.0274		-15.9	100.0	L
Ethyl tert-butyl ether	0.6930	0.6445			-7.0	100.0	A
Ethylbenzene	1.1461	1.1774			2.7	20.0	A
Freon 113	0.2702	0.2445			-9.5	100.0	A
Heptane	50.0000		48.6481		-2.7	100.0	L
Hexachlorobutadiene	0.5495	0.4655			-15.3	100.0	A
Hexachloroethane	0.4866	0.5083			4.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3426	0.3479			1.6	100.0	A
2-Hexanone	250		232		-7.3	100.0	L
Iodomethane	50.0000		35.6947		-28.6	100.0	L
Isobutyl alcohol	500		321		-35.9	100.0	L
Isopropyl Alcohol	250		207		-17.2	100.0	L
Isopropylbenzene	50.0000		48.8848		-2.2	100.0	L
p-Isopropyltoluene	50.0000		46.6939		-6.6	100.0	L
Methyl acetate	50.0000		44.6906		-10.6	100.0	L
Methyl acrylate	0.2017	0.2000			-0.8	100.0	A
Methacrylonitrile	50.0000		48.5976		-2.8	100.0	L
Methyl cyclohexane	1.0274	1.0882			5.9	100.0	A
Methyl methacrylate	50.0000		42.1466		-15.7	100.0	L
Methyl t-Butyl Ether	0.6772	0.5794			-14.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.4047	0.4528			11.9	100.0	A
Methylene Chloride	50.0000		50.6088		1.2	100.0	Q
Naphthalene	50.0000		44.3614		-11.3	100.0	Q
Nitrobenzene	500		438		-12.4	100.0	Q
2-Nitropropane	250		214		-14.4	100.0	L
Octane	50.0000		44.8317		-10.3	100.0	L
Pentachloroethane	0.6496	0.6157			-5.2	100.0	A
Pentane	0.1386	0.1306			-5.7	100.0	A
n-Propanol	0.0184	0.0174			-5.5	100.0	A
Propionitrile	0.0336	0.0307			-8.7	100.0	A
n-Propylbenzene	50.0000		48.7376		-2.5	100.0	L
Styrene	50.0000		47.0335		-5.9	100.0	L
1,1,1,2-Tetrachloroethane	0.8864	0.8120			-8.4	100.0	A
1,1,2,2-Tetrachloroethane	0.7947	0.7169		0.300	-9.8	100.0	A
Tetrachloroethene	0.9157	0.7639			-16.6	100.0	A
Tetrahydrofuran	0.0516	0.0531			2.9	100.0	A
Toluene	1.8476	1.8772			1.6	20.0	A
Total Xylenes	1.3188	1.4128			7.1	100.0	A
1,2,3-Trichlorobenzene	50.0000		43.2957		-13.4	100.0	Q
1,2,4-Trichlorobenzene	50.0000		42.7612		-14.5	100.0	Q
1,1,1-Trichloroethane	0.5574	0.5023			-9.9	100.0	A
1,1,2-Trichloroethane	0.5820	0.5435			-6.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-034

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3768	0.3369			-10.6	100.0	A
Trichlorofluoromethane	0.6514	0.5813			-10.8	100.0	A
1,2,3-Trichloropropane	0.2923	0.2498			-14.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		47.2511		-5.5	100.0	L
1,3,5-Trimethylbenzene	50.0000		48.4867		-3.0	100.0	L
Vinyl Acetate	0.0609	0.0584			-4.0	100.0	A
Vinyl Chloride	0.2944	0.2828			-3.9	20.0	A
o-Xylene	50.0000		47.3017		-5.4	100.0	Q
mp-Xylene	1.3599	1.4425			6.1	100.0	A
4-Bromofluorobenzene	50.0000		42.9408		-14.1	100.0	L
Dibromofluoromethane	50.0000		43.0623		-13.9	100.0	L
1,2-Dichloroethane-d4	50.0000		42.5168		-15.0	100.0	L
Toluene-d8	50.0000		43.9767		-12.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2180033

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-034

Lab File ID: 15051963.D Lab Sample ID: 2180033

Date Analyzed: 5/19/2015 Time Analyzed: 21:44

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2180034(LCS)	2180034	15051964.D	22:01
TB-051415	2071034001	15051977.D	01:45
MRC-MW-93A-051415	2071034002	15051978.D	02:02
MRC-MW-115A-051415	2071034003	15051979.D	02:19
MRC-MW-21A-051415	2071034004	15051980.D	02:36
MRC-MW-21B-051415	2071034006	15051981.D	02:53
MRC-MW-109B-051415	2071034007	15051982.D	03:11

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.51	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.39	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	0.31	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2180033(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Matrix (soil/water): WATER Lab Sample ID: 2180033

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051963.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/19/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2181443

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-034

Lab File ID: 15052155.D Lab Sample ID: 2181443

Date Analyzed: 5/21/2015 Time Analyzed: 20:59

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2181444(LCS)	2181444	15052156.D	21:16
MRC-MW-21B-051415-DL2	2071034006	15052184.D	05:16
MRC-MW-109B-051415-DL	2071034007	15052185.D	05:34

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.25	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-034

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2180033(MB)	92.7	91.2	94.4	95.0	0
02	2180034(LCS)	89.0	85.1	86.2	87.6	0
03	TB-051415	95.1	97.0	102	95.8	0
04	MRC-MW-93A-051415	92.5	96.6	102	94.5	0
05	MRC-MW-115A-051415	91.1	96.0	102	92.7	0
06	MRC-MW-21A-051415	90.3	94.3	99.9	91.9	0
07	MRC-MW-21B-051415	104	91.2	98.6	97.3	0
08	MRC-MW-109B-051415	93.1	92.1	101	98.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-034

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
09	2181443(MB)	87.2	88.5	93.5	91.9	0
10	2181444(LCS)	83.1	84.3	87.0	84.7	0
11	MRC-MW-21B-051415-DL20	88.5	94.7	102	92.4	0
12	MRC-MW-109B-051415-DL10	86.9	91.9	97.9	92.5	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		95.5	95.5	(40-151)
Benzene	20.0		20.0	99.8	(80-124)
Bromochloromethane	20.0		19.8	98.9	(73-117)
Bromodichloromethane	20.0		19.9	99.3	(79-126)
Bromoform	20.0		18.0	90.1	(70-123)
Bromomethane	20.0		20.7	104	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		16.5	82.6	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		19.3	96.7	(85-117)
Chlorodibromomethane	20.0		19.4	97	(77-122)
Chloroethane	20.0		15.8	79.1	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		16.8	84	(38-156)
Cyclohexane	20.0		20.6	103	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.7	(59-133)
1,2-Dibromoethane	20.0		18.6	92.9	(80-124)
1,2-Dichlorobenzene	20.0		20.3	101	(82-118)
1,3-Dichlorobenzene	20.0		20.5	102	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.4	(81-116)
Dichlorodifluoromethane	20.0		14.2	71.2	(17-166)
1,1-Dichloroethane	20.0		18.5	92.5	(78-124)
1,2-Dichloroethane	20.0		19.4	96.8	(70-133)
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.6	97.8	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.2	(71-122)
1,2-Dichloropropane	20.0		20.2	101	(81-127)
cis-1,3-Dichloropropene	20.0		17.8	89.2	(81-121)
trans-1,3-Dichloroprope	20.0		16.6	82.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.1	(1-280)
Ethylbenzene	20.0		21.2	106	(80-124)
Freon 113	20.0		18.3	91.6	(50-130)
2-Hexanone	100		84.4	84.4	(65-154)
Isopropylbenzene	20.0		18.8	93.8	(73-129)
Methyl acetate	20.0		18.9	94.6	(70-130)
Methyl cyclohexane	20.0		21.1	105	(70-130)
Methyl t-Butyl Ether	20.0		17.8	88.9	(69-115)
4-Methyl-2-Pentanone(MI	100		105	105	(71-146)
Methylene Chloride	20.0		20.9	104	(76-121)
Styrene	20.0		19.0	94.8	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.0	95.1	(74-135)
Tetrachloroethene	20.0		19.1	95.6	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.5	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		19.1	95.4	(66-130)
1,1,2-Trichloroethane	20.0		19.4	96.9	(82-126)
Trichloroethene	20.0		20.0	100	(77-124)
Trichlorofluoromethane	20.0		17.1	85.6	(38-123)
Vinyl Chloride	20.0		17.8	88.9	(27-138)
o-Xylene	20.0		17.9	89.6	(79-124)
mp-Xylene	40.0		43.4	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		101	101	(40-151)
Benzene	20.0		20.1	101	(80-124)
Bromochloromethane	20.0		18.9	94.5	(73-117)
Bromodichloromethane	20.0		20.1	101	(79-126)
Bromoform	20.0		17.7	88.7	(70-123)
Bromomethane	20.0		17.1	85.6	(45-148)
2-Butanone	100		106	106	(50-152)
Carbon Disulfide	20.0		14.2	71	(57-131)
Carbon Tetrachloride	20.0		19.1	95.5	(62-132)
Chlorobenzene	20.0		19.3	96.5	(85-117)
Chlorodibromomethane	20.0		18.8	93.8	(77-122)
Chloroethane	20.0		15.1	75.7	(51-142)
Chloroform	20.0		21.7	108	(78-122)
Chloromethane	20.0		15.2	75.9	(38-156)
Cyclohexane	20.0		19.1	95.7	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.3	(59-133)
1,2-Dibromoethane	20.0		18.5	92.7	(80-124)
1,2-Dichlorobenzene	20.0		20.0	100	(82-118)
1,3-Dichlorobenzene	20.0		20.5	103	(81-118)
1,4-Dichlorobenzene	20.0		19.8	99.1	(81-116)
Dichlorodifluoromethane	20.0		10.8	54.1	(17-166)
1,1-Dichloroethane	20.0		18.8	93.9	(78-124)
1,2-Dichloroethane	20.0		19.5	97.6	(70-133)
1,1-Dichloroethene	20.0		16.1	80.5	(63-128)
cis-1,2-Dichloroethene	20.0		19.5	97.5	(78-125)
trans-1,2-Dichloroethen	20.0		18.8	93.8	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.3	(81-121)
trans-1,3-Dichloroprope	20.0		16.9	84.5	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.2	(1-280)
Ethylbenzene	20.0		20.9	105	(80-124)
Freon 113	20.0		16.7	83.3	(50-130)
2-Hexanone	100		90.0	90	(65-154)
Isopropylbenzene	20.0		18.8	94.2	(73-129)
Methyl acetate	20.0		19.6	97.9	(70-130)
Methyl cyclohexane	20.0		19.7	98.5	(70-130)
Methyl t-Butyl Ether	20.0		17.3	86.7	(69-115)
4-Methyl-2-Pentanone(MI	100		114	114	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		19.2	95.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		17.8	89.1	(72-124)
Toluene	20.0		20.6	103	(80-125)
1,2,3-Trichlorobenzene	20.0		15.7	78.4	(61-126)
1,2,4-Trichlorobenzene	20.0		15.1	75.7	(67-123)
1,1,1-Trichloroethane	20.0		18.4	92.2	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.2	(82-126)
Trichloroethene	20.0		19.7	98.3	(77-124)
Trichlorofluoromethane	20.0		15.5	77.3	(38-123)
Vinyl Chloride	20.0		16.0	80.1	(27-138)
o-Xylene	20.0		17.1	85.7	(79-124)
mp-Xylene	40.0		42.1	105	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Lab File ID: 15051957.D Date Analyzed: 5/19/2015

Instrument ID: ms15.i Time Analyzed: 20:01

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	442721	5.913	482015	7.686	1040326	3.910
UPPER LIMIT	885442	6.413	964030	8.186	2080652	4.410
LOWER LIMIT	221361	5.413	241008	7.186	520163	3.410
SAMPLE NO.						
2180033(MB)	340198	5.912	318831	7.686	905002	3.910
2180034(LCS)	443472	5.913	470706	7.686	1024069	3.910
TB-051415	283737	5.913	259561	7.686	772682	3.910
MRC-MW-93A-051415	287223	5.913	261984	7.686	774163	3.910
MRC-MW-115A-05141	287761	5.912	259599	7.686	775112	3.910
MRC-MW-21A-051415	289914	5.913	266180	7.686	773673	3.910
MRC-MW-21B-051415	299702	5.913	285950	7.686	819938	3.910
MRC-MW-109B-05141	303898	5.912	307170	7.686	826652	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Lab File ID: 15052152.D Date Analyzed: 5/21/2015

Instrument ID: ms15.i Time Analyzed: 19:52

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	446497	5.913	474860	7.686	1061227	3.910
UPPER LIMIT	892994	6.413	949720	8.186	2122454	4.410
LOWER LIMIT	223249	5.413	237430	7.186	530614	3.410
SAMPLE NO.						
1800	446497	5.913	474860	7.686	1061227	3.910
2181443(MB)	318636	5.912	286997	7.686	865950	3.910
2181444(LCS)	433839	5.913	450022	7.686	982691	3.910
MRC-MW-21B-051415	280181	5.912	240060	7.686	758603	3.910
MRC-MW-109B-05141	281666	5.913	247729	7.686	783018	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Light Petroleum Gases by Method RSK-175 Summary Forms

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	05/21/15	0714		
02	LEVEL5	LEVEL5	05/21/15	0737		
03	2181087	2181087	05/21/15	0752		
04	MRC-MW-21B-0	2071034006	05/21/15	1124		
05	MRC-MW-21B-0	2181089	05/21/15	1202		
06	LEVEL5	LEVEL5	05/21/15	1301		
07						
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RF10: MD2A009 RF50: MD2A002 RF100: MD2A003
RF500: MD2A004 RF1000: MD2A005 RF10000: MD2A006

COMPOUND	RF10	RF50	RF100	RF500	RF1000	RF10000
METHANE	32.711	28.296	25.507	24.980	23.513	23.330
ETHENE	50.865	48.801	48.238	46.332	43.516	
ETHANE	52.610	49.609	48.713	46.893	44.002	
PROPANE	74.249	71.266	71.078	69.260	65.151	65.296
N-BUTANE	100.200	92.620	91.190	91.852	86.759	82.379
ISO-BUTANE	90.200	89.460	88.960	90.476	85.102	82.421

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RT1: MD2A009 RT2: MD2A002 RT3: MD2A003
RT4: MD2A004 RT5: MD2A005 RT6: MD2A006

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
METHANE	0.500	0.480	0.490	0.490	0.490	0.490
ETHENE	1.900	1.890	1.890	1.890	1.890	
ETHANE	2.370	2.360	2.360	2.360	2.360	
PROPANE	4.480	4.470	4.470	4.470	4.470	4.460
N-BUTANE	6.700	6.700	6.700	6.690	6.690	6.680
ISO-BUTANE	6.190	6.170	6.170	6.170	6.160	6.160

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RT7: MD2A007

COMPOUND	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
METHANE	0.490	0.490	0.457	0.536
ETHENE		1.892	1.751	2.056
ETHANE		2.362	2.180	2.560
PROPANE	4.430	4.464	4.119	4.835
N-BUTANE	6.610	6.681	6.164	7.236
ISO-BUTANE	6.080	6.157	5.692	6.682

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date: 05/21/15 Time: 0714

Lab File ID: MELA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	26.018463	0.01	2.46	15.00	AVRG	
ETHENE	47.550000	52.313946	0.01	10.02	15.00	AVRG	
ETHANE	48.365000	52.442963	0.01	8.43	15.00	AVRG	
PROPANE	67.640000	75.624869	0.01	11.80	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-NT
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-NT

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date: 05/21/15 Time: 0737

Lab File ID: MELA002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.596105	0.01	-7.08	15.00	AVRG
ETHENE	47.550000	44.278320	0.01	-6.88	15.00	AVRG
ETHANE	48.365000	46.085149	0.01	-4.71	15.00	AVRG
PROPANE	67.640000	68.113524	0.01	0.70	15.00	AVRG
N-BUTANE	88.662000	90.194000	0.01	1.73	15.00	AVRG
ISO-BUTANE	85.930000	90.146000	0.01	4.91	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: GC03 Calibration Date: 05/21/15 Time: 1301

Lab File ID: MELA016 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.893388	0.01	-5.91	15.00	AVRG
ETHENE	47.550000	45.069336	0.01	-5.22	15.00	AVRG
ETHANE	48.365000	46.915842	0.01	-3.00	15.00	AVRG
PROPANE	67.640000	69.854886	0.01	3.27	15.00	AVRG
N-BUTANE	88.662000	94.375000	0.01	6.44	15.00	AVRG
ISO-BUTANE	85.930000	92.521000	0.01	7.67	15.00	AVRG

FORM VII VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2181087

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Lab File ID: MELA003 Lab Sample ID: 2181087

Date Analyzed: 05/21/15 Time Analyzed: 0752

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW-21B-0	2071034006	MELA012	1124
02	MRC-MW-21B-0	2181089	MELA013	1202
03				
04				
05				
06				
07				
08				
09				
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30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2181087

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Matrix: (soil/water) WATER Lab Sample ID: 2181087

Sample wt/vol: _____ (g/mL) ML Lab File ID: MELA003

Level: (low/med) LOW Date Received: 05/21/15

% Moisture: not dec. _____ Date Analyzed: 05/21/15

GC Column: PORAPAK Q ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	METHANE	1.5	U
74-85-1	ETHENE	2.4	U
74-84-0	ETHANE	3.3	U

Semivolatile Organics by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1800	1800	05/30/15	1402	8.36	
02	2184609	2184609	05/30/15	1428	8.36	
03	2184610LCSLO	2184610	05/30/15	1452	8.36	
04	MRC-MW-21A-0	2071034004	05/30/15	1607	8.36	
05	MRC-MW-21B-0	2071034006	05/30/15	1632	8.36	
06	1800	1800	05/31/15	0909	8.36	
07	MRC-MW-21B-0	2071034006	05/31/15	1006	8.36	
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31						
32						

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
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31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
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19					
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21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Instrument ID: MS12 Calibration Date: 05/30/15 Time: 1402

Lab File ID: 12053001 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.41e-003	3.5e-003	1.3080559	0.00001	-2.57	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6160684	0.6160684	0.00001	-13.47	30.00	AVRG

FORM VII SV

FORM 4

SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Lab File ID: 12053002 Lab Sample ID: 2184609

Instrument ID: MS12 Date Extracted: 05/30/15

Matrix: (soil/water) WATER Date Analyzed: 05/30/15

Level:(low/med) LOW Time Analyzed: 1428

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2184610LCSLO	2184610	12053003	05/30/15
02	MRC-MW-21A-0	2071034004	12053006	05/30/15
03	MRC-MW-21B-0	2071034006	12053007	05/30/15
04	MRC-MW-21B-0	2071034006	12053103	05/31/15
05				
06				
07				
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COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Matrix: (soil/water) WATER Lab Sample ID: 2184609

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12053002

Level: (low/med) LOW Date Received: 05/30/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/30/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/30/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2184609	83								0
02	2184610LCSLO	97								0
03	MRC-MW-21A-0	83								0
04	MRC-MW-21B-0	78								0
05	MRC-MW-21B-0	85								0
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
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20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Matrix Spike - Sample No.: 2184610LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0587560	84	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/30/15

Lab File ID (Standard): 12053001 Time Analyzed: 1402

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56807	6.35				
	UPPER LIMIT	73849	6.85				
	LOWER LIMIT	39765	5.85				
	SAMPLE NO.						
01	2184609	58574	6.35				
02	2184610LCSLO	57330	6.35				
03	MRC-MW-21A-0	53763	6.35				
04	MRC-MW-21B-0	55510	6.35				
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/31/15

Lab File ID (Standard): 12053101 Time Analyzed: 0909

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	50956	6.35				
	UPPER LIMIT	66243	6.85				
	LOWER LIMIT	35669	5.85				
	SAMPLE NO.						
01	MRC-MW-21B-0	51287	6.35				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

Total Metals by 6020A Summary Forms

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1046	0.1000	105		90 - 110	M	5/18/2015	00:07	A051815 23
	Arsenic	0.1030	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
	Barium	0.1018	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Beryllium	0.1010	0.1000	101		90 - 110	M	5/18/2015	00:07	A051815 23
	Cadmium	0.1016	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Chromium	0.1035	0.1000	104		90 - 110	M	5/18/2015	00:07	A051815 23
	Cobalt	0.1031	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
	Copper	0.1025	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Lead	0.1018	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Manganese	0.1040	0.1000	104		90 - 110	M	5/18/2015	00:07	A051815 23
	Molybdenum	0.1023	0.1000	102		90 - 110	M	5/18/2015	00:07	A051815 23
	Nickel	0.0997	0.1000	100		90 - 110	M	5/18/2015	00:07	A051815 23
	Selenium	0.1010	0.1000	101		90 - 110	M	5/18/2015	00:07	A051815 23
	Silver	0.0995	0.1000	100		90 - 110	M	5/18/2015	00:07	A051815 23
	Thallium	0.0992	0.1000	99		90 - 110	M	5/18/2015	00:07	A051815 23
	Vanadium	0.1034	0.1000	103		90 - 110	M	5/18/2015	00:07	A051815 23
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/18/2015	00:14	A051815 23
	Barium	0.0051	0.0050	102		70 - 130	M	5/18/2015	00:14	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/18/2015	00:14	A051815 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/18/2015	00:14	A051815 23
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/18/2015	00:14	A051815 23
	Copper	0.0047	0.0050	94		70 - 130	M	5/18/2015	00:14	A051815 23
	Lead	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Manganese	0.0048	0.0050	96		70 - 130	M	5/18/2015	00:14	A051815 23
	Molybdenum	0.0020	0.0020	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Nickel	0.0049	0.0050	98		70 - 130	M	5/18/2015	00:14	A051815 23
	Selenium	0.0050	0.0050	100		70 - 130	M	5/18/2015	00:14	A051815 23
	Silver	0.0019	0.0020	95		70 - 130	M	5/18/2015	00:14	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	00:14	A051815 23
	Vanadium	0.0018	0.0020	90		70 - 130	M	5/18/2015	00:14	A051815 23

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1026	0.1000	103		90 - 110	M	5/18/2015	13:29	A051815 23
	Arsenic	0.0995	0.1000	100		90 - 110	M	5/18/2015	13:29	A051815 23
	Barium	0.0949	0.1000	95		90 - 110	M	5/18/2015	13:29	A051815 23
	Beryllium	0.0953	0.1000	95		90 - 110	M	5/18/2015	13:29	A051815 23
	Cadmium	0.0962	0.1000	96		90 - 110	M	5/18/2015	13:29	A051815 23
	Chromium	0.1012	0.1000	101		90 - 110	M	5/18/2015	13:29	A051815 23
	Cobalt	0.1010	0.1000	101		90 - 110	M	5/18/2015	13:29	A051815 23
	Copper	0.1020	0.1000	102		90 - 110	M	5/18/2015	13:29	A051815 23
	Lead	0.1022	0.1000	102		90 - 110	M	5/18/2015	13:29	A051815 23
	Manganese	0.1028	0.1000	103		90 - 110	M	5/18/2015	13:29	A051815 23
	Molybdenum	0.1001	0.1000	100		90 - 110	M	5/18/2015	13:29	A051815 23
	Nickel	0.0947	0.1000	95		90 - 110	M	5/18/2015	13:29	A051815 23
	Selenium	0.0998	0.1000	100		90 - 110	M	5/18/2015	13:29	A051815 23
	Silver	0.0966	0.1000	97		90 - 110	M	5/18/2015	13:29	A051815 23
	Thallium	0.0991	0.1000	99		90 - 110	M	5/18/2015	13:29	A051815 23
	Vanadium	0.1026	0.1000	103		90 - 110	M	5/18/2015	13:29	A051815 23
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/18/2015	13:37	A051815 23
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/18/2015	13:37	A051815 23
	Barium	0.0047	0.0050	94		70 - 130	M	5/18/2015	13:37	A051815 23
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/18/2015	13:37	A051815 23
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/18/2015	13:37	A051815 23
	Chromium	0.0017	0.0020	85		70 - 130	M	5/18/2015	13:37	A051815 23
	Cobalt	0.0046	0.0050	92		70 - 130	M	5/18/2015	13:37	A051815 23
	Copper	0.0046	0.0050	92		70 - 130	M	5/18/2015	13:37	A051815 23
	Lead	0.0021	0.0020	105		70 - 130	M	5/18/2015	13:37	A051815 23
	Manganese	0.0047	0.0050	94		70 - 130	M	5/18/2015	13:37	A051815 23
	Molybdenum	0.0018	0.0020	90		70 - 130	M	5/18/2015	13:37	A051815 23
	Nickel	0.0047	0.0050	94		70 - 130	M	5/18/2015	13:37	A051815 23
	Selenium	0.0048	0.0050	96		70 - 130	M	5/18/2015	13:37	A051815 23
	Silver	0.0018	0.0020	90		70 - 130	M	5/18/2015	13:37	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	13:37	A051815 23
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/18/2015	13:37	A051815 23

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1004	0.1000	100		90 - 110	M	5/18/2015	14:36	A051815 23
	Arsenic	0.0991	0.1000	99		90 - 110	M	5/18/2015	14:36	A051815 23
	Barium	0.0935	0.1000	94		90 - 110	M	5/18/2015	14:36	A051815 23
	Beryllium	0.0948	0.1000	95		90 - 110	M	5/18/2015	14:36	A051815 23
	Cadmium	0.0948	0.1000	95		90 - 110	M	5/18/2015	14:36	A051815 23
	Chromium	0.1005	0.1000	100		90 - 110	M	5/18/2015	14:36	A051815 23
	Cobalt	0.1004	0.1000	100		90 - 110	M	5/18/2015	14:36	A051815 23
	Copper	0.1001	0.1000	100		90 - 110	M	5/18/2015	14:36	A051815 23
	Lead	0.0992	0.1000	99		90 - 110	M	5/18/2015	14:36	A051815 23
	Manganese	0.1021	0.1000	102		90 - 110	M	5/18/2015	14:36	A051815 23
	Molybdenum	0.0983	0.1000	98		90 - 110	M	5/18/2015	14:36	A051815 23
	Nickel	0.0938	0.1000	94		90 - 110	M	5/18/2015	14:36	A051815 23
	Selenium	0.0996	0.1000	100		90 - 110	M	5/18/2015	14:36	A051815 23
	Silver	0.0952	0.1000	95		90 - 110	M	5/18/2015	14:36	A051815 23
	Thallium	0.0967	0.1000	97		90 - 110	M	5/18/2015	14:36	A051815 23
	Vanadium	0.1017	0.1000	102		90 - 110	M	5/18/2015	14:36	A051815 23
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Arsenic	0.0030	0.0030	100		70 - 130	M	5/18/2015	14:44	A051815 23
	Barium	0.0047	0.0050	94		70 - 130	M	5/18/2015	14:44	A051815 23
	Beryllium	0.0009	0.0010	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/18/2015	14:44	A051815 23
	Chromium	0.0018	0.0020	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Cobalt	0.0045	0.0050	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Copper	0.0046	0.0050	92		70 - 130	M	5/18/2015	14:44	A051815 23
	Lead	0.0020	0.0020	100		70 - 130	M	5/18/2015	14:44	A051815 23
	Manganese	0.0047	0.0050	94		70 - 130	M	5/18/2015	14:44	A051815 23
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/18/2015	14:44	A051815 23
	Nickel	0.0047	0.0050	94		70 - 130	M	5/18/2015	14:44	A051815 23
	Selenium	0.0049	0.0050	98		70 - 130	M	5/18/2015	14:44	A051815 23
	Silver	0.0018	0.0020	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Thallium	0.0009	0.0010	90		70 - 130	M	5/18/2015	14:44	A051815 23
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/18/2015	14:44	A051815 23

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1096	0.1000	110		90 - 110	M	5/19/2015	08:56	A051915 08
	Arsenic	0.1050	0.1000	105		90 - 110	M	5/19/2015	08:56	A051915 08
	Barium	0.0984	0.1000	98		90 - 110	M	5/19/2015	08:56	A051915 08
	Beryllium	0.1075	0.1000	108		90 - 110	M	5/19/2015	08:56	A051915 08
	Cadmium	0.0982	0.1000	98		90 - 110	M	5/19/2015	08:56	A051915 08
	Chromium	0.1078	0.1000	108		90 - 110	M	5/19/2015	08:56	A051915 08
	Cobalt	0.1074	0.1000	107		90 - 110	M	5/19/2015	08:56	A051915 08
	Copper	0.1073	0.1000	107		90 - 110	M	5/19/2015	08:56	A051915 08
	Lead	0.1013	0.1000	101		90 - 110	M	5/19/2015	08:56	A051915 08
	Manganese	0.1081	0.1000	108		90 - 110	M	5/19/2015	08:56	A051915 08
	Molybdenum	0.1075	0.1000	108		90 - 110	M	5/19/2015	08:56	A051915 08
	Nickel	0.0990	0.1000	99		90 - 110	M	5/19/2015	08:56	A051915 08
	Selenium	0.1031	0.1000	103		90 - 110	M	5/19/2015	08:56	A051915 08
	Silver	0.1006	0.1000	101		90 - 110	M	5/19/2015	08:56	A051915 08
	Thallium	0.1028	0.1000	103		90 - 110	M	5/19/2015	08:56	A051915 08
	Vanadium	0.1088	0.1000	109		90 - 110	M	5/19/2015	08:56	A051915 08
LLICV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/19/2015	09:05	A051915 08
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/19/2015	09:05	A051915 08
	Barium	0.0047	0.0050	94		70 - 130	M	5/19/2015	09:05	A051915 08
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/19/2015	09:05	A051915 08
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/19/2015	09:05	A051915 08
	Chromium	0.0017	0.0020	85		70 - 130	M	5/19/2015	09:05	A051915 08
	Cobalt	0.0047	0.0050	94		70 - 130	M	5/19/2015	09:05	A051915 08
	Copper	0.0047	0.0050	94		70 - 130	M	5/19/2015	09:05	A051915 08
	Lead	0.0018	0.0020	90		70 - 130	M	5/19/2015	09:05	A051915 08
	Manganese	0.0048	0.0050	96		70 - 130	M	5/19/2015	09:05	A051915 08
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/19/2015	09:05	A051915 08
	Nickel	0.0046	0.0050	92		70 - 130	M	5/19/2015	09:05	A051915 08
	Selenium	0.0051	0.0050	102		70 - 130	M	5/19/2015	09:05	A051915 08
	Silver	0.0019	0.0020	95		70 - 130	M	5/19/2015	09:05	A051915 08
	Thallium	0.0009	0.0010	90		70 - 130	M	5/19/2015	09:05	A051915 08
	Vanadium	0.0019	0.0020	95		70 - 130	M	5/19/2015	09:05	A051915 08

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1065	0.1000	106		90 - 110	M	5/19/2015	10:01	A051915 08
	Arsenic	0.1068	0.1000	107		90 - 110	M	5/19/2015	10:01	A051915 08
	Barium	0.0951	0.1000	95		90 - 110	M	5/19/2015	10:01	A051915 08
	Beryllium	0.0979	0.1000	98		90 - 110	M	5/19/2015	10:01	A051915 08
	Cadmium	0.0956	0.1000	96		90 - 110	M	5/19/2015	10:01	A051915 08
	Chromium	0.1051	0.1000	105		90 - 110	M	5/19/2015	10:01	A051915 08
	Cobalt	0.1060	0.1000	106		90 - 110	M	5/19/2015	10:01	A051915 08
	Copper	0.1065	0.1000	106		90 - 110	M	5/19/2015	10:01	A051915 08
	Lead	0.0995	0.1000	100		90 - 110	M	5/19/2015	10:01	A051915 08
	Manganese	0.1070	0.1000	107		90 - 110	M	5/19/2015	10:01	A051915 08
	Molybdenum	0.1039	0.1000	104		90 - 110	M	5/19/2015	10:01	A051915 08
	Nickel	0.0975	0.1000	98		90 - 110	M	5/19/2015	10:01	A051915 08
	Selenium	0.1034	0.1000	103		90 - 110	M	5/19/2015	10:01	A051915 08
	Silver	0.0973	0.1000	97		90 - 110	M	5/19/2015	10:01	A051915 08
	Thallium	0.1009	0.1000	101		90 - 110	M	5/19/2015	10:01	A051915 08
	Vanadium	0.1047	0.1000	105		90 - 110	M	5/19/2015	10:01	A051915 08
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/19/2015	10:09	A051915 08
	Arsenic	0.0032	0.0030	107		70 - 130	M	5/19/2015	10:09	A051915 08
	Barium	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:09	A051915 08
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/19/2015	10:09	A051915 08
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/19/2015	10:09	A051915 08
	Chromium	0.0016	0.0020	80		70 - 130	M	5/19/2015	10:09	A051915 08
	Cobalt	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:09	A051915 08
	Copper	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:09	A051915 08
	Lead	0.0018	0.0020	90		70 - 130	M	5/19/2015	10:09	A051915 08
	Manganese	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:09	A051915 08
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/19/2015	10:09	A051915 08
	Nickel	0.0047	0.0050	94		70 - 130	M	5/19/2015	10:09	A051915 08
	Selenium	0.0056	0.0050	112		70 - 130	M	5/19/2015	10:09	A051915 08
	Silver	0.0018	0.0020	90		70 - 130	M	5/19/2015	10:09	A051915 08
	Thallium	0.0008	0.0010	80		70 - 130	M	5/19/2015	10:09	A051915 08
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/19/2015	10:09	A051915 08

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1072	0.1000	107		90 - 110	M	5/19/2015	10:50	A051915 08
	Arsenic	0.1053	0.1000	105		90 - 110	M	5/19/2015	10:50	A051915 08
	Barium	0.0965	0.1000	96		90 - 110	M	5/19/2015	10:50	A051915 08
	Beryllium	0.0946	0.1000	95		90 - 110	M	5/19/2015	10:50	A051915 08
	Cadmium	0.0953	0.1000	95		90 - 110	M	5/19/2015	10:50	A051915 08
	Chromium	0.1067	0.1000	107		90 - 110	M	5/19/2015	10:50	A051915 08
	Cobalt	0.1083	0.1000	108		90 - 110	M	5/19/2015	10:50	A051915 08
	Copper	0.1089	0.1000	109		90 - 110	M	5/19/2015	10:50	A051915 08
	Lead	0.1008	0.1000	101		90 - 110	M	5/19/2015	10:50	A051915 08
	Manganese	0.1086	0.1000	109		90 - 110	M	5/19/2015	10:50	A051915 08
	Molybdenum	0.1038	0.1000	104		90 - 110	M	5/19/2015	10:50	A051915 08
	Nickel	0.0996	0.1000	100		90 - 110	M	5/19/2015	10:50	A051915 08
	Selenium	0.1041	0.1000	104		90 - 110	M	5/19/2015	10:50	A051915 08
	Silver	0.0980	0.1000	98		90 - 110	M	5/19/2015	10:50	A051915 08
	Thallium	0.1013	0.1000	101		90 - 110	M	5/19/2015	10:50	A051915 08
	Vanadium	0.1071	0.1000	107		90 - 110	M	5/19/2015	10:50	A051915 08
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	5/19/2015	10:58	A051915 08
	Arsenic	0.0034	0.0030	113		70 - 130	M	5/19/2015	10:58	A051915 08
	Barium	0.0047	0.0050	94		70 - 130	M	5/19/2015	10:58	A051915 08
	Beryllium	0.0009	0.0010	90		70 - 130	M	5/19/2015	10:58	A051915 08
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/19/2015	10:58	A051915 08
	Chromium	0.0016	0.0020	80		70 - 130	M	5/19/2015	10:58	A051915 08
	Cobalt	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:58	A051915 08
	Copper	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:58	A051915 08
	Lead	0.0018	0.0020	90		70 - 130	M	5/19/2015	10:58	A051915 08
	Manganese	0.0049	0.0050	98		70 - 130	M	5/19/2015	10:58	A051915 08
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/19/2015	10:58	A051915 08
	Nickel	0.0048	0.0050	96		70 - 130	M	5/19/2015	10:58	A051915 08
	Selenium	0.0051	0.0050	102		70 - 130	M	5/19/2015	10:58	A051915 08
	Silver	0.0018	0.0020	90		70 - 130	M	5/19/2015	10:58	A051915 08
	Thallium	0.0009	0.0010	90		70 - 130	M	5/19/2015	10:58	A051915 08
	Vanadium	0.0022	0.0020	110		70 - 130	M	5/19/2015	10:58	A051915 08

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1061	0.1000	106		90 - 110	M	5/19/2015	11:39	A051915 08
	Arsenic	0.1051	0.1000	105		90 - 110	M	5/19/2015	11:39	A051915 08
	Barium	0.0968	0.1000	97		90 - 110	M	5/19/2015	11:39	A051915 08
	Beryllium	0.0963	0.1000	96		90 - 110	M	5/19/2015	11:39	A051915 08
	Cadmium	0.0961	0.1000	96		90 - 110	M	5/19/2015	11:39	A051915 08
	Chromium	0.1055	0.1000	106		90 - 110	M	5/19/2015	11:39	A051915 08
	Cobalt	0.1069	0.1000	107		90 - 110	M	5/19/2015	11:39	A051915 08
	Copper	0.1073	0.1000	107		90 - 110	M	5/19/2015	11:39	A051915 08
	Lead	0.1006	0.1000	101		90 - 110	M	5/19/2015	11:39	A051915 08
	Manganese	0.1075	0.1000	108		90 - 110	M	5/19/2015	11:39	A051915 08
	Molybdenum	0.1035	0.1000	104		90 - 110	M	5/19/2015	11:39	A051915 08
	Nickel	0.0981	0.1000	98		90 - 110	M	5/19/2015	11:39	A051915 08
	Selenium	0.1051	0.1000	105		90 - 110	M	5/19/2015	11:39	A051915 08
	Silver	0.0970	0.1000	97		90 - 110	M	5/19/2015	11:39	A051915 08
	Thallium	0.1012	0.1000	101		90 - 110	M	5/19/2015	11:39	A051915 08
	Vanadium	0.1050	0.1000	105		90 - 110	M	5/19/2015	11:39	A051915 08
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	5/19/2015	11:47	A051915 08
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/19/2015	11:47	A051915 08
	Barium	0.0047	0.0050	94		70 - 130	M	5/19/2015	11:47	A051915 08
	Beryllium	0.0009	0.0010	90		70 - 130	M	5/19/2015	11:47	A051915 08
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/19/2015	11:47	A051915 08
	Chromium	0.0016	0.0020	80		70 - 130	M	5/19/2015	11:47	A051915 08
	Cobalt	0.0048	0.0050	96		70 - 130	M	5/19/2015	11:47	A051915 08
	Copper	0.0049	0.0050	98		70 - 130	M	5/19/2015	11:47	A051915 08
	Lead	0.0018	0.0020	90		70 - 130	M	5/19/2015	11:47	A051915 08
	Manganese	0.0049	0.0050	98		70 - 130	M	5/19/2015	11:47	A051915 08
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/19/2015	11:47	A051915 08
	Nickel	0.0047	0.0050	94		70 - 130	M	5/19/2015	11:47	A051915 08
	Selenium	0.0047	0.0050	94		70 - 130	M	5/19/2015	11:47	A051915 08
	Silver	0.0018	0.0020	90		70 - 130	M	5/19/2015	11:47	A051915 08
	Thallium	0.0009	0.0010	90		70 - 130	M	5/19/2015	11:47	A051915 08
	Vanadium	0.0021	0.0020	105		70 - 130	M	5/19/2015	11:47	A051915 08

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	00:10	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	00:10	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	00:10	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	00:10	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	00:10	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	00:10	A051815 2341 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	13:33	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	13:33	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	13:33	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	13:33	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	13:33	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	13:33	A051815 2341 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/18/2015	14:40	A051815 2341 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/18/2015	14:40	A051815 2341 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/18/2015	14:40	A051815 2341 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/18/2015	14:40	A051815 2341 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/18/2015	14:40	A051815 2341 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/18/2015	14:40	A051815 2341 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/19/2015	09:01	A051915 0830 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/19/2015	09:01	A051915 0830 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/19/2015	09:01	A051915 0830 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	09:01	A051915 0830 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/19/2015	09:01	A051915 0830 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	09:01	A051915 0830 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/19/2015	10:05	A051915 0830 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/19/2015	10:05	A051915 0830 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/19/2015	10:05	A051915 0830 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:05	A051915 0830 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/19/2015	10:05	A051915 0830 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:05	A051915 0830 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/19/2015	10:54	A051915 0830 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/19/2015	10:54	A051915 0830 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/19/2015	10:54	A051915 0830 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	10:54	A051915 0830 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/19/2015	10:54	A051915 0830 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	10:54	A051915 0830 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/19/2015	11:43	A051915 0830 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/19/2015	11:43	A051915 0830 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/19/2015	11:43	A051915 0830 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/19/2015	11:43	A051915 0830 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/19/2015	11:43	A051915 0830 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/19/2015	11:43	A051915 0830 (

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2179129			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	13:59	A051815 2341 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/18/2015	13:59	A051815 2341 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/18/2015	13:59	A051815 2341 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/18/2015	13:59	A051815 2341 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	13:59	A051815 2341 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	13:59	A051815 2341 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	5/18/2015	13:59	A051815 2341 (
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/18/2015	13:59	A051815 2341 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	13:59	A051815 2341 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/18/2015	13:59	A051815 2341 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/18/2015	13:59	A051815 2341 (

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Arsenic	0.0002				-0.00300 - -0.00300	5/18/2015	00:18	A051815 2341
	Barium	0.0004				-0.01000 - -0.01000	5/18/2015	00:18	A051815 2341
	Beryllium	0.00002				-0.001000 - -0.001000	5/18/2015	00:18	A051815 2341
	Cadmium	0.0008				-0.00100 - -0.00100	5/18/2015	00:18	A051815 2341
	Chromium	0.0006				-0.00400 - -0.00400	5/18/2015	00:18	A051815 2341
	Cobalt	0.0006				-0.00600 - -0.00600	5/18/2015	00:18	A051815 2341
	Copper	0.0015				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Lead	0.0001				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Manganese	0.0012				-0.01000 - -0.01000	5/18/2015	00:18	A051815 2341
	Molybdenum	1.9973	2.00000	100		80 - 120%	5/18/2015	00:18	A051815 2341
	Nickel	0.0006				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Selenium	0.0000				-0.00500 - -0.00500	5/18/2015	00:18	A051815 2341
	Silver	0.0004				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
	Thallium	0.00002				-0.001000 - -0.001000	5/18/2015	00:18	A051815 2341
	Vanadium	0.0001				-0.00200 - -0.00200	5/18/2015	00:18	A051815 2341
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	5/18/2015	00:22	A051815 2341
	Arsenic	0.0200	0.02000	100		80 - 120%	5/18/2015	00:22	A051815 2341
	Barium	0.0003				-0.00500 - -0.00500	5/18/2015	00:22	A051815 2341
	Beryllium	0.00003				-0.001000 - -0.001000	5/18/2015	00:22	A051815 2341
	Cadmium	0.0097	0.01000	97		80 - 120%	5/18/2015	00:22	A051815 2341
	Chromium	0.0189	0.02000	94		80 - 120%	5/18/2015	00:22	A051815 2341
	Cobalt	0.0379	0.04000	95		80 - 120%	5/18/2015	00:22	A051815 2341
	Copper	0.0189	0.02000	94		80 - 120%	5/18/2015	00:22	A051815 2341
	Lead	0.0002				-0.00200 - -0.00200	5/18/2015	00:22	A051815 2341
	Manganese	0.0196	0.02000	98		80 - 120%	5/18/2015	00:22	A051815 2341
	Molybdenum	2.0373	2.00000	102		80 - 120%	5/18/2015	00:22	A051815 2341
	Nickel	0.0356	0.04000	89		80 - 120%	5/18/2015	00:22	A051815 2341
	Selenium	0.0194	0.02000	97		80 - 120%	5/18/2015	00:22	A051815 2341
	Silver	0.0176	0.02000	88		80 - 120%	5/18/2015	00:22	A051815 2341
	Thallium	0.00002				-0.001000 - -0.001000	5/18/2015	00:22	A051815 2341
	Vanadium	0.0401	0.04000	100		80 - 120%	5/18/2015	00:22	A051815 2341

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/19/2015	09:09	A051915 0830
	Arsenic	0.0002				-0.00300 - -0.00300	5/19/2015	09:09	A051915 0830
	Barium	0.0003				-0.01000 - -0.01000	5/19/2015	09:09	A051915 0830
	Beryllium	0.00000				-0.001000 - -0.001000	5/19/2015	09:09	A051915 0830
	Cadmium	0.0008				-0.00100 - -0.00100	5/19/2015	09:09	A051915 0830
	Chromium	0.0005				-0.00400 - -0.00400	5/19/2015	09:09	A051915 0830
	Cobalt	0.0006				-0.00600 - -0.00600	5/19/2015	09:09	A051915 0830
	Copper	0.0014				-0.00500 - -0.00500	5/19/2015	09:09	A051915 0830
	Lead	0.0001				-0.00200 - -0.00200	5/19/2015	09:09	A051915 0830
	Manganese	0.0012				-0.01000 - -0.01000	5/19/2015	09:09	A051915 0830
	Molybdenum	2.0490	2.00000	102		80 - 120%	5/19/2015	09:09	A051915 0830
	Nickel	0.0007				-0.00500 - -0.00500	5/19/2015	09:09	A051915 0830
	Selenium	0.0000				-0.00500 - -0.00500	5/19/2015	09:09	A051915 0830
	Silver	0.0004				-0.00200 - -0.00200	5/19/2015	09:09	A051915 0830
	Thallium	0.00001				-0.001000 - -0.001000	5/19/2015	09:09	A051915 0830
	Vanadium	0.0002				-0.00200 - -0.00200	5/19/2015	09:09	A051915 0830
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	5/19/2015	09:13	A051915 0830
	Arsenic	0.0199	0.02000	100		80 - 120%	5/19/2015	09:13	A051915 0830
	Barium	0.0003				-0.00500 - -0.00500	5/19/2015	09:13	A051915 0830
	Beryllium	0.00000				-0.001000 - -0.001000	5/19/2015	09:13	A051915 0830
	Cadmium	0.0092	0.01000	92		80 - 120%	5/19/2015	09:13	A051915 0830
	Chromium	0.0184	0.02000	92		80 - 120%	5/19/2015	09:13	A051915 0830
	Cobalt	0.0382	0.04000	96		80 - 120%	5/19/2015	09:13	A051915 0830
	Copper	0.0184	0.02000	92		80 - 120%	5/19/2015	09:13	A051915 0830
	Lead	0.0002				-0.00200 - -0.00200	5/19/2015	09:13	A051915 0830
	Manganese	0.0194	0.02000	97		80 - 120%	5/19/2015	09:13	A051915 0830
	Molybdenum	2.0654	2.00000	103		80 - 120%	5/19/2015	09:13	A051915 0830
	Nickel	0.0340	0.04000	85		80 - 120%	5/19/2015	09:13	A051915 0830
	Selenium	0.0192	0.02000	96		80 - 120%	5/19/2015	09:13	A051915 0830
	Silver	0.0171	0.02000	86		80 - 120%	5/19/2015	09:13	A051915 0830
	Thallium	0.00000				-0.001000 - -0.001000	5/19/2015	09:13	A051915 0830
	Vanadium	0.0405	0.04000	101		80 - 120%	5/19/2015	09:13	A051915 0830

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2179130									
	Antimony	mg/L	0.2220	0.2170		98		80 - 120	M
	Arsenic	mg/L	0.2220	0.2095		94		80 - 120	M
	Barium	mg/L	2.2220	2.3353		105		80 - 120	M
	Beryllium	mg/L	0.2220	0.1972		89		80 - 120	M
	Cadmium	mg/L	0.2220	0.2265		102		80 - 120	M
	Chromium	mg/L	0.2220	0.2213		100		80 - 120	M
	Cobalt	mg/L	0.2220	0.2225		100		80 - 120	M
	Copper	mg/L	0.2220	0.2176		98		80 - 120	M
	Lead	mg/L	0.2220	0.2326		105		80 - 120	M
	Manganese	mg/L	0.2220	0.2278		103		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2194		99		80 - 120	M
	Nickel	mg/L	0.2220	0.2290		103		80 - 120	M
	Selenium	mg/L	0.2220	0.1936		87		80 - 120	M
	Silver	mg/L	0.1110	0.1110		100		80 - 120	M
	Thallium	mg/L	0.2220	0.2136		96		80 - 120	M
	Vanadium	mg/L	0.2220	0.2221		100		80 - 120	M

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	2341												
BLK	BLK	2344	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	2348	99		99		100		99		99		101	
STANDARD 2	STANDARD 2	2352	99		98		100		100		99		100	
STANDARD 3	STANDARD 3	2356	99		98		100		100		100		102	
STANDARD 4	STANDARD 4	2359	99		98		101		101		100		101	
STANDARD 5	STANDARD 5	0003	99		98		100		101		98		101	
ICV	ICV	0007	102		101		103		104		105		106	
ICB1	ICB	0010	99		98		100		99		98		100	
LLICV	LLICV	0014	99		96		100		100		99		101	
ICS-A1	ICSA	0018	88		96		94		98		100		100	
ICS-AB1	ICSAB	0022	91		96		96		99		99		102	
CHECK	ZZZZZZ	0025												
CHECK	ZZZZZZ	0029												
2177674	ZZZZZZ	0033												
2177675	ZZZZZZ	0037												
2070699002	ZZZZZZ	0040												
2070699005	ZZZZZZ	0044												
2070699009	ZZZZZZ	0048												
2070699010	ZZZZZZ	0052												
2070699011	ZZZZZZ	0055												
2070699012	ZZZZZZ	0059												
2070384001	ZZZZZZ	0103												
2070384001L	ZZZZZZ	0107												
CCV1	ZZZZZZ	0111												
CCB1	ZZZZZZ	0114												
LLCCV	ZZZZZZ	0118												
2070384001P	ZZZZZZ	0122												
2070384002	ZZZZZZ	0125												
2070384003	ZZZZZZ	0129												
2177676	ZZZZZZ	0133												
2177677	ZZZZZZ	0136												
2070384004	ZZZZZZ	0140												
2070384006	ZZZZZZ	0144												
2070651001	ZZZZZZ	0148												
2070651001L	ZZZZZZ	0151												
2070651001P	ZZZZZZ	0155												
CCV2	ZZZZZZ	0159												
CCB2	ZZZZZZ	0202												
LLCCV	ZZZZZZ	0206												
2070651002	ZZZZZZ	0210												
2070651003	ZZZZZZ	0213												
2070651004	ZZZZZZ	0217												
2070651005	ZZZZZZ	0221												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070651006	ZZZZZZ	0225												
2070651007	ZZZZZZ	0228												
2070699010	ZZZZZZ	0232												
2070699011	ZZZZZZ	0236												
2070699012	ZZZZZZ	0240												
CHECK	ZZZZZZ	0243												
CCV3	ZZZZZZ	0247												
CCB3	ZZZZZZ	0251												
LLCCV	ZZZZZZ	0254												
2178845	ZZZZZZ	0258												
2178847	ZZZZZZ	0302												
2178852	ZZZZZZ	0306												
2178854	ZZZZZZ	0309												
2070681008	ZZZZZZ	0313												
2070681008L	ZZZZZZ	0317												
2070681008P	ZZZZZZ	0320												
2070681009	ZZZZZZ	0324												
2070681010	ZZZZZZ	0328												
2070759001	ZZZZZZ	0332												
CCV4	ZZZZZZ	0336												
CCB4	ZZZZZZ	0340												
LLCCV	ZZZZZZ	0343												
2069415001	ZZZZZZ	0347												
2178848	ZZZZZZ	0351												
2178849	ZZZZZZ	0355												
2069415001P	ZZZZZZ	0358												
2069415003	ZZZZZZ	0402												
2070695001	ZZZZZZ	0406												
2070695002	ZZZZZZ	0410												
2178847	ZZZZZZ	0414												
2178854	ZZZZZZ	0417												
2070937004	ZZZZZZ	0421												
CCV5	ZZZZZZ	0425												
CCB5	ZZZZZZ	0429												
LLCCV	ZZZZZZ	0432												
2070937004L	ZZZZZZ	0436												
2070937004P	ZZZZZZ	0440												
2070937005	ZZZZZZ	0443												
2070937019	ZZZZZZ	0447												
2070987001	ZZZZZZ	0451												
2070944001	ZZZZZZ	0455												
2070945001	ZZZZZZ	0458												
2178855	ZZZZZZ	0502												
2178856	ZZZZZZ	0506												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070945001P	ZZZZZZ	0510												
CCV6	ZZZZZZ	0514												
CCB6	ZZZZZZ	0518												
LLCCV	ZZZZZZ	0521												
2071312001	ZZZZZZ	0525												
2071315001	ZZZZZZ	0529												
2071316001	ZZZZZZ	0533												
CCV7	ZZZZZZ	0536												
CCB7	ZZZZZZ	0540												
LLCCV	ZZZZZZ	0544												
CHECK	ZZZZZZ	0804												
CHECK	ZZZZZZ	0808												
CCV8	ZZZZZZ	0812												
CCB8	ZZZZZZ	0817												
LLCCV	ZZZZZZ	0820												
2178535	ZZZZZZ	0828												
2178536	ZZZZZZ	0831												
2071244001	ZZZZZZ	0835												
2071244002	ZZZZZZ	0839												
2071244003	ZZZZZZ	0843												
2071279001	ZZZZZZ	0847												
2071280001	ZZZZZZ	0850												
2071281001	ZZZZZZ	0854												
2071282001	ZZZZZZ	0858												
2071247001	ZZZZZZ	0902												
CCV9	ZZZZZZ	0906												
CCB9	ZZZZZZ	0910												
LLCCV	ZZZZZZ	0913												
2071246001	ZZZZZZ	0917												
2071276001	ZZZZZZ	0921												
2071278001	ZZZZZZ	0925												
2178537	ZZZZZZ	0929												
2178538	ZZZZZZ	0932												
2071278001P	ZZZZZZ	0936												
2071278001	ZZZZZZ	0940												
CHECK	ZZZZZZ	0944												
CHECK	ZZZZZZ	0948												
CHECK	ZZZZZZ	0951												
CCV10	ZZZZZZ	0955												
CCB10	ZZZZZZ	0959												
LLCCV	ZZZZZZ	1002												
2178535	ZZZZZZ	1007												
2178536	ZZZZZZ	1011												
2071279001	ZZZZZZ	1015												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2071280001	ZZZZZZ	1019												
2071281001	ZZZZZZ	1022												
2071282001	ZZZZZZ	1026												
CHECK	ZZZZZZ	1030												
CHECK	ZZZZZZ	1034												
CCV11	ZZZZZZ	1037												
CCB11	ZZZZZZ	1041												
LLCCV	ZZZZZZ	1045												
2178859	ZZZZZZ	1143												
2178861	ZZZZZZ	1147												
2070681011	ZZZZZZ	1150												
2178862	ZZZZZZ	1154												
2178863	ZZZZZZ	1158												
2070681011P	ZZZZZZ	1202												
2070681012	ZZZZZZ	1205												
2070681012L	ZZZZZZ	1209												
2070681012P	ZZZZZZ	1213												
2070681013	ZZZZZZ	1217												
CCV12	ZZZZZZ	1221												
CCB12	ZZZZZZ	1224												
LLCCV	ZZZZZZ	1228												
2071314001	ZZZZZZ	1232												
2070903001	ZZZZZZ	1236												
2070941002	ZZZZZZ	1239												
2070941004	ZZZZZZ	1243												
2070941006	ZZZZZZ	1247												
2070941008	ZZZZZZ	1251												
2070941010	ZZZZZZ	1255												
2070941012	ZZZZZZ	1259												
2070941014	ZZZZZZ	1303												
2070941016	ZZZZZZ	1307												
CCV13	ZZZZZZ	1310												
CCB13	ZZZZZZ	1314												
LLCCV	ZZZZZZ	1318												
2070941018	ZZZZZZ	1322												
2070941004	ZZZZZZ	1325												
CCV14	CCV	1329	104		94		103		101		89		94	
CCB14	CCB	1333	104		93		102		99		86		95	
LLCCV	LLCCV	1337	104		94		102		101		88		94	
2179129	MB for HBN 73487	1359	102		115		98		96		82		93	
2179130	LCS for HBN 7348	1403	101		111		99		96		84		94	
2179133	ZZZZZZ	1406												
2179134	ZZZZZZ	1410												
2070681014	ZZZZZZ	1414												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2070940001	ZZZZZZ	1418												
2070940001S	S03M67D2S	1421	96		106		96		94		82		94	
2070940001S	S03M67D2SD	1425	97		107		96		95		81		94	
2070940003	ZZZZZZ	1429												
2070940003L	ZZZZZZ	1432												
CCV15	CCV	1436	106		95		104		101		88		96	
CCB15	CCB	1440	104		93		102		98		88		95	
LLCCV	LLCCV	1444	103		94		102		100		89		94	
2070940004	ZZZZZZ	1447												
2070940005	ZZZZZZ	1451												
2070940006	ZZZZZZ	1455												
2070940007	ZZZZZZ	1458												
2070940008	ZZZZZZ	1502												
2070940009	ZZZZZZ	1506												
2071227001	ZZZZZZ	1510												
2179135	ZZZZZZ	1513												
2179136	ZZZZZZ	1517												
2071227003	ZZZZZZ	1521												
CCV16	ZZZZZZ	1524												
CCB16	ZZZZZZ	1528												
LLCCV	ZZZZZZ	1532												
2071227002	ZZZZZZ	1536												
2071227002L	ZZZZZZ	1539												
2071227004	ZZZZZZ	1543												
2071227006	ZZZZZZ	1547												
2071227007	ZZZZZZ	1550												
2071227008	ZZZZZZ	1554												
2071227009	ZZZZZZ	1558												
2071227010	ZZZZZZ	1602												
CCV17	ZZZZZZ	1605												
CCB17	ZZZZZZ	1609												
LLCCV	ZZZZZZ	1613												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/19/2015 End Date: 05/19/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0830												
BLK	BLK	0834	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0838	101		100		100		101		103		100	
STANDARD 2	STANDARD 2	0841	101		100		100		101		103		101	
STANDARD 3	STANDARD 3	0845	102		99		101		101		103		102	
STANDARD 4	STANDARD 4	0849	102		100		101		102		104		103	
STANDARD 5	STANDARD 5	0852	101		100		102		101		104		102	
ICV	ICV	0856	102		101		102		101		106		103	
ICB1	ICB	0901	101		99		100		100		102		102	
LLICV	LLICV	0905	102		101		101		102		107		104	
ICS-A1	ICSA	0909	92		100		95		99		104		104	
ICS-AB1	ICSAB	0913	94		101		97		101		107		103	
CHECK	ZZZZZZ	0917												
CHECK	ZZZZZZ	0920												
2071227002	ZZZZZZ	0924												
2071227002L	ZZZZZZ	0928												
2071227004	ZZZZZZ	0932												
2071227006	ZZZZZZ	0935												
2071227007	ZZZZZZ	0939												
2071227008	ZZZZZZ	0943												
2071227009	ZZZZZZ	0946												
2071227010	ZZZZZZ	0950												
2070937020	ZZZZZZ	0954												
2071059016	ZZZZZZ	0958												
CCV1	CCV	1001	105		101		104		100		97		102	
CCB1	CCB	1005	103		99		101		97		98		102	
LLCCV	LLCCV	1009	104		99		102		99		99		103	
2071034002	MRC-MW-93A-05141	1012	86		120		90		104		105		111	
2071034004	MRC-MW-21A-05141	1016	98		112		100		97		93		101	
2071034005	MRC-MW-DUP07-051	1020	100		111		101		96		89		100	
2071034006	MRC-MW-21B-05141	1024	101		112		102		96		93		102	
2071034007	MRC-MW-109B-0514	1028	94		112		98		97		93		102	
2071059017	ZZZZZZ	1031												
2071215001	ZZZZZZ	1035												
2071215002	ZZZZZZ	1039												
2071215003	ZZZZZZ	1043												
2071215004	ZZZZZZ	1046												
CCV2	CCV	1050	107		103		107		102		100		106	
CCB2	CCB	1054	106		101		104		100		97		105	
LLCCV	LLCCV	1058	106		102		106		102		103		106	
2071215005	ZZZZZZ	1101												
2071215006	ZZZZZZ	1105												
2071215007	ZZZZZZ	1109												
2071215008	ZZZZZZ	1113												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/19/2015 End Date: 05/19/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2071034002	MRC-MW-93A-05141	1132	98		99		99		98		95		103	
2071215004	ZZZZZZ	1136												
CCV3	CCV	1139	103		100		104		99		97		103	
CCB3	CCB	1143	103		99		103		98		96		101	
LLCCV	LLCCV	1147	104		100		103		99		99		103	
2179645	ZZZZZZ	1229												
2179646	ZZZZZZ	1233												
2071246001	ZZZZZZ	1236												
2071482001	ZZZZZZ	1240												
2179647	ZZZZZZ	1244												
2179648	ZZZZZZ	1248												
2071482001P	ZZZZZZ	1252												
2071483001	ZZZZZZ	1256												
2071483002	ZZZZZZ	1259												
2071483003	ZZZZZZ	1303												
CCV4	ZZZZZZ	1307												
CCB4	ZZZZZZ	1311												
LLCCV	ZZZZZZ	1315												
2071246001	ZZZZZZ	1325												
CCV5	ZZZZZZ	1417												
CCB5	ZZZZZZ	1421												
LLCCV	ZZZZZZ	1424												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2341												
BLK	2344	100											
STANDARD 1	2348	100											
STANDARD 2	2352	100											
STANDARD 3	2356	100											
STANDARD 4	2359	100											
STANDARD 5	0003	101											
ICV	0007	104											
ICB	0010	100											
LLICV	0014	100											
ICSA	0018	100											
ICSAB	0022	101											
ZZZZZZ	0025												
ZZZZZZ	0029												
ZZZZZZ	0033												
ZZZZZZ	0037												
ZZZZZZ	0040												
ZZZZZZ	0044												
ZZZZZZ	0048												
ZZZZZZ	0052												
ZZZZZZ	0055												
ZZZZZZ	0059												
ZZZZZZ	0103												
ZZZZZZ	0107												
ZZZZZZ	0111												
ZZZZZZ	0114												
ZZZZZZ	0118												
ZZZZZZ	0122												
ZZZZZZ	0125												
ZZZZZZ	0129												
ZZZZZZ	0133												
ZZZZZZ	0136												
ZZZZZZ	0140												
ZZZZZZ	0144												
ZZZZZZ	0148												
ZZZZZZ	0151												
ZZZZZZ	0155												
ZZZZZZ	0159												
ZZZZZZ	0202												
ZZZZZZ	0206												
ZZZZZZ	0210												
ZZZZZZ	0213												
ZZZZZZ	0217												
ZZZZZZ	0221												
ZZZZZZ	0225												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0228												
ZZZZZZ	0232												
ZZZZZZ	0236												
ZZZZZZ	0240												
ZZZZZZ	0243												
ZZZZZZ	0247												
ZZZZZZ	0251												
ZZZZZZ	0254												
ZZZZZZ	0258												
ZZZZZZ	0302												
ZZZZZZ	0306												
ZZZZZZ	0309												
ZZZZZZ	0313												
ZZZZZZ	0317												
ZZZZZZ	0320												
ZZZZZZ	0324												
ZZZZZZ	0328												
ZZZZZZ	0332												
ZZZZZZ	0336												
ZZZZZZ	0340												
ZZZZZZ	0343												
ZZZZZZ	0347												
ZZZZZZ	0351												
ZZZZZZ	0355												
ZZZZZZ	0358												
ZZZZZZ	0402												
ZZZZZZ	0406												
ZZZZZZ	0410												
ZZZZZZ	0414												
ZZZZZZ	0417												
ZZZZZZ	0421												
ZZZZZZ	0425												
ZZZZZZ	0429												
ZZZZZZ	0432												
ZZZZZZ	0436												
ZZZZZZ	0440												
ZZZZZZ	0443												
ZZZZZZ	0447												
ZZZZZZ	0451												
ZZZZZZ	0455												
ZZZZZZ	0458												
ZZZZZZ	0502												
ZZZZZZ	0506												
ZZZZZZ	0510												
ZZZZZZ	0514												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0518												
ZZZZZZ	0521												
ZZZZZZ	0525												
ZZZZZZ	0529												
ZZZZZZ	0533												
ZZZZZZ	0536												
ZZZZZZ	0540												
ZZZZZZ	0544												
ZZZZZZ	0804												
ZZZZZZ	0808												
ZZZZZZ	0812												
ZZZZZZ	0817												
ZZZZZZ	0820												
ZZZZZZ	0828												
ZZZZZZ	0831												
ZZZZZZ	0835												
ZZZZZZ	0839												
ZZZZZZ	0843												
ZZZZZZ	0847												
ZZZZZZ	0850												
ZZZZZZ	0854												
ZZZZZZ	0858												
ZZZZZZ	0902												
ZZZZZZ	0906												
ZZZZZZ	0910												
ZZZZZZ	0913												
ZZZZZZ	0917												
ZZZZZZ	0921												
ZZZZZZ	0925												
ZZZZZZ	0929												
ZZZZZZ	0932												
ZZZZZZ	0936												
ZZZZZZ	0940												
ZZZZZZ	0944												
ZZZZZZ	0948												
ZZZZZZ	0951												
ZZZZZZ	0955												
ZZZZZZ	0959												
ZZZZZZ	1002												
ZZZZZZ	1007												
ZZZZZZ	1011												
ZZZZZZ	1015												
ZZZZZZ	1019												
ZZZZZZ	1022												
ZZZZZZ	1026												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1030												
ZZZZZZ	1034												
ZZZZZZ	1037												
ZZZZZZ	1041												
ZZZZZZ	1045												
ZZZZZZ	1143												
ZZZZZZ	1147												
ZZZZZZ	1150												
ZZZZZZ	1154												
ZZZZZZ	1158												
ZZZZZZ	1202												
ZZZZZZ	1205												
ZZZZZZ	1209												
ZZZZZZ	1213												
ZZZZZZ	1217												
ZZZZZZ	1221												
ZZZZZZ	1224												
ZZZZZZ	1228												
ZZZZZZ	1232												
ZZZZZZ	1236												
ZZZZZZ	1239												
ZZZZZZ	1243												
ZZZZZZ	1247												
ZZZZZZ	1251												
ZZZZZZ	1255												
ZZZZZZ	1259												
ZZZZZZ	1303												
ZZZZZZ	1307												
ZZZZZZ	1310												
ZZZZZZ	1314												
ZZZZZZ	1318												
ZZZZZZ	1322												
ZZZZZZ	1325												
CCV	1329	104											
CCB	1333	104											
LLCCV	1337	104											
MB for HBN 73487	1359	100											
LCS for HBN 7348	1403	101											
ZZZZZZ	1406												
ZZZZZZ	1410												
ZZZZZZ	1414												
ZZZZZZ	1418												
S03M67D2S	1421	102											
S03M67D2SD	1425	102											
ZZZZZZ	1429												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/17/2015 End Date: 05/18/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1432												
CCV	1436	106											
CCB	1440	104											
LLCCV	1444	103											
ZZZZZZ	1447												
ZZZZZZ	1451												
ZZZZZZ	1455												
ZZZZZZ	1458												
ZZZZZZ	1502												
ZZZZZZ	1506												
ZZZZZZ	1510												
ZZZZZZ	1513												
ZZZZZZ	1517												
ZZZZZZ	1521												
ZZZZZZ	1524												
ZZZZZZ	1528												
ZZZZZZ	1532												
ZZZZZZ	1536												
ZZZZZZ	1539												
ZZZZZZ	1543												
ZZZZZZ	1547												
ZZZZZZ	1550												
ZZZZZZ	1554												
ZZZZZZ	1558												
ZZZZZZ	1602												
ZZZZZZ	1605												
ZZZZZZ	1609												
ZZZZZZ	1613												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/19/2015 End Date: 05/19/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0830												
BLK	0834	100											
STANDARD 1	0838	100											
STANDARD 2	0841	100											
STANDARD 3	0845	100											
STANDARD 4	0849	101											
STANDARD 5	0852	102											
ICV	0856	102											
ICB	0901	100											
LLICV	0905	101											
ICSA	0909	101											
ICSAB	0913	103											
ZZZZZZ	0917												
ZZZZZZ	0920												
ZZZZZZ	0924												
ZZZZZZ	0928												
ZZZZZZ	0932												
ZZZZZZ	0935												
ZZZZZZ	0939												
ZZZZZZ	0943												
ZZZZZZ	0946												
ZZZZZZ	0950												
ZZZZZZ	0954												
ZZZZZZ	0958												
CCV	1001	105											
CCB	1005	103											
LLCCV	1009	103											
MRC-MW-93A-05141	1012	135			*								
MRC-MW-21A-05141	1016	103											
MRC-MW-DUP07-051	1020	103											
MRC-MW-21B-05141	1024	106											
MRC-MW-109B-0514	1028	103											
ZZZZZZ	1031												
ZZZZZZ	1035												
ZZZZZZ	1039												
ZZZZZZ	1043												
ZZZZZZ	1046												
CCV	1050	108											
CCB	1054	107											
LLCCV	1058	107											
ZZZZZZ	1101												
ZZZZZZ	1105												
ZZZZZZ	1109												
ZZZZZZ	1113												
MRC-MW-93A-05141	1132	106											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-034

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/19/2015 End Date: 05/19/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1136												
CCV	1139	104											
CCB	1143	103											
LLCCV	1147	104											
ZZZZZZ	1229												
ZZZZZZ	1233												
ZZZZZZ	1236												
ZZZZZZ	1240												
ZZZZZZ	1244												
ZZZZZZ	1248												
ZZZZZZ	1252												
ZZZZZZ	1256												
ZZZZZZ	1259												
ZZZZZZ	1303												
ZZZZZZ	1307												
ZZZZZZ	1311												
ZZZZZZ	1315												
ZZZZZZ	1325												
ZZZZZZ	1417												
ZZZZZZ	1421												
ZZZZZZ	1424												

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	73487						
2179129	MB for HBN 73487 [MDIG/50880	MB	QC-WAT	5/18/15	45.0	50.0	
2179130	LCS for HBN 73487 [MDIG/50880	LCS	QC-WAT	5/18/15	45.0	50.0	
2070940001S	S03M67D2S	MS	GROUN	5/18/15	45.0	50.0	
2070940001SD	S03M67D2SD	MSD	GROUN	5/18/15	45.0	50.0	
2071034002	MRC-MW-93A-051415	SAM	WATER	5/18/15	45.0	50.0	
2071034004	MRC-MW-21A-051415	SAM	WATER	5/18/15	45.0	50.0	
2071034005	MRC-MW-DUP07-051415	SAM	WATER	5/18/15	45.0	50.0	
2071034006	MRC-MW-21B-051415	SAM	WATER	5/18/15	45.0	50.0	
2071034007	MRC-MW-109B-051415	SAM	WATER	5/18/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	2341																										
BLK	1.00	2344			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	2348			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	2352			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	2356			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	2359			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0003			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0007			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0010			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0014			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0018			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0025																										
ZZZZZZ	1.00	0029																										
ZZZZZZ	1.00	0033																										
ZZZZZZ	1.00	0037																										
ZZZZZZ	1.00	0040																										
ZZZZZZ	1.00	0044																										
ZZZZZZ	1.00	0048																										
ZZZZZZ	1.00	0052																										
ZZZZZZ	1.00	0055																										
ZZZZZZ	1.00	0059																										
ZZZZZZ	1.00	0103																										
ZZZZZZ	5.00	0107																										
ZZZZZZ	1.00	0111																										
ZZZZZZ	1.00	0114																										
ZZZZZZ	1.00	0118																										
ZZZZZZ	1.00	0122																										
ZZZZZZ	1.00	0125																										
ZZZZZZ	1.00	0129																										
ZZZZZZ	1.00	0133																										
ZZZZZZ	1.00	0136																										
ZZZZZZ	1.00	0140																										
ZZZZZZ	1.00	0144																										
ZZZZZZ	1.00	0148																										
ZZZZZZ	5.00	0151																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0155																								
ZZZZZZ	1.00	0159																								
ZZZZZZ	1.00	0202																								
ZZZZZZ	1.00	0206																								
ZZZZZZ	1.00	0210																								
ZZZZZZ	1.00	0213																								
ZZZZZZ	1.00	0217																								
ZZZZZZ	1.00	0221																								
ZZZZZZ	1.00	0225																								
ZZZZZZ	1.00	0228																								
ZZZZZZ	5.00	0232																								
ZZZZZZ	5.00	0236																								
ZZZZZZ	5.00	0240																								
ZZZZZZ	1.00	0243																								
ZZZZZZ	1.00	0247																								
ZZZZZZ	1.00	0251																								
ZZZZZZ	1.00	0254																								
ZZZZZZ	5.00	0258																								
ZZZZZZ	5.00	0302																								
ZZZZZZ	5.00	0306																								
ZZZZZZ	5.00	0309																								
ZZZZZZ	5.00	0313																								
ZZZZZZ	25.00	0317																								
ZZZZZZ	5.00	0320																								
ZZZZZZ	5.00	0324																								
ZZZZZZ	5.00	0328																								
ZZZZZZ	5.00	0332																								
ZZZZZZ	1.00	0336																								
ZZZZZZ	1.00	0340																								
ZZZZZZ	1.00	0343																								
ZZZZZZ	5.00	0347																								
ZZZZZZ	5.00	0351																								
ZZZZZZ	5.00	0355																								
ZZZZZZ	5.00	0358																								
ZZZZZZ	5.00	0402																								
ZZZZZZ	5.00	0406																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0410																								
ZZZZZZ	5.00	0414																								
ZZZZZZ	5.00	0417																								
ZZZZZZ	5.00	0421																								
ZZZZZZ	1.00	0425																								
ZZZZZZ	1.00	0429																								
ZZZZZZ	1.00	0432																								
ZZZZZZ	25.00	0436																								
ZZZZZZ	5.00	0440																								
ZZZZZZ	5.00	0443																								
ZZZZZZ	5.00	0447																								
ZZZZZZ	5.00	0451																								
ZZZZZZ	5.00	0455																								
ZZZZZZ	5.00	0458																								
ZZZZZZ	5.00	0502																								
ZZZZZZ	5.00	0506																								
ZZZZZZ	5.00	0510																								
ZZZZZZ	1.00	0514																								
ZZZZZZ	1.00	0518																								
ZZZZZZ	1.00	0521																								
ZZZZZZ	5.00	0525																								
ZZZZZZ	5.00	0529																								
ZZZZZZ	5.00	0533																								
ZZZZZZ	1.00	0536																								
ZZZZZZ	1.00	0540																								
ZZZZZZ	1.00	0544																								
ZZZZZZ	1.00	0804																								
ZZZZZZ	1.00	0808																								
ZZZZZZ	1.00	0812																								
ZZZZZZ	1.00	0817																								
ZZZZZZ	1.00	0820																								
ZZZZZZ	5.00	0828																								
ZZZZZZ	5.00	0831																								
ZZZZZZ	5.00	0835																								
ZZZZZZ	5.00	0839																								
ZZZZZZ	5.00	0843																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	0847																								
ZZZZZZ	5.00	0850																								
ZZZZZZ	5.00	0854																								
ZZZZZZ	5.00	0858																								
ZZZZZZ	5.00	0902																								
ZZZZZZ	1.00	0906																								
ZZZZZZ	1.00	0910																								
ZZZZZZ	1.00	0913																								
ZZZZZZ	5.00	0917																								
ZZZZZZ	5.00	0921																								
ZZZZZZ	50.00	0925																								
ZZZZZZ	50.00	0929																								
ZZZZZZ	50.00	0932																								
ZZZZZZ	50.00	0936																								
ZZZZZZ	500.00	0940																								
ZZZZZZ	1.00	0944																								
ZZZZZZ	1.00	0948																								
ZZZZZZ	1.00	0951																								
ZZZZZZ	1.00	0955																								
ZZZZZZ	1.00	0959																								
ZZZZZZ	1.00	1002																								
ZZZZZZ	5.00	1007																								
ZZZZZZ	5.00	1011																								
ZZZZZZ	5.00	1015																								
ZZZZZZ	5.00	1019																								
ZZZZZZ	5.00	1022																								
ZZZZZZ	5.00	1026																								
ZZZZZZ	1.00	1030																								
ZZZZZZ	1.00	1034																								
ZZZZZZ	1.00	1037																								
ZZZZZZ	1.00	1041																								
ZZZZZZ	1.00	1045																								
ZZZZZZ	5.00	1143																								
ZZZZZZ	5.00	1147																								
ZZZZZZ	5.00	1150																								
ZZZZZZ	5.00	1154																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	1158																										
ZZZZZZ	5.00	1202																										
ZZZZZZ	5.00	1205																										
ZZZZZZ	5.00	1209																										
ZZZZZZ	5.00	1213																										
ZZZZZZ	5.00	1217																										
ZZZZZZ	1.00	1221																										
ZZZZZZ	1.00	1224																										
ZZZZZZ	1.00	1228																										
ZZZZZZ	5.00	1232																										
ZZZZZZ	5.00	1236																										
ZZZZZZ	5.00	1239																										
ZZZZZZ	5.00	1243																										
ZZZZZZ	5.00	1247																										
ZZZZZZ	5.00	1251																										
ZZZZZZ	5.00	1255																										
ZZZZZZ	5.00	1259																										
ZZZZZZ	5.00	1303																										
ZZZZZZ	5.00	1307																										
ZZZZZZ	1.00	1310																										
ZZZZZZ	1.00	1314																										
ZZZZZZ	1.00	1318																										
ZZZZZZ	5.00	1322																										
ZZZZZZ	50.00	1325																										
CCV14	1.00	1329			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB14	1.00	1333			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1337			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2179129	1.00	1359			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2179130	1.00	1403			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1406																										
ZZZZZZ	1.00	1410																										
ZZZZZZ	1.00	1414																										
ZZZZZZ	1.00	1418																										
2070940001S	1.00	1421			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2070940001SD	1.00	1425			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1429																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051815 2341

Start Date: 5/17/2015 End Date: 5/18/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	1432																									
CCV15	1.00	1436			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB15	1.00	1440			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1444			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1451																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1506																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1517																										
ZZZZZZ	1.00	1521																										
ZZZZZZ	1.00	1524																										
ZZZZZZ	1.00	1528																										
ZZZZZZ	1.00	1532																										
ZZZZZZ	1.00	1536																										
ZZZZZZ	5.00	1539																										
ZZZZZZ	1.00	1543																										
ZZZZZZ	1.00	1547																										
ZZZZZZ	1.00	1550																										
ZZZZZZ	1.00	1554																										
ZZZZZZ	1.00	1558																										
ZZZZZZ	1.00	1602																										
ZZZZZZ	1.00	1605																										
ZZZZZZ	1.00	1609																										
ZZZZZZ	1.00	1613																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051915 0830

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0830																										
BLK	1.00	0834			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0838			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0841			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0845			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0849			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0852			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0856			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0901			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0905			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0909			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0913			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0917																										
ZZZZZZ	1.00	0920																										
ZZZZZZ	1.00	0924																										
ZZZZZZ	5.00	0928																										
ZZZZZZ	1.00	0932																										
ZZZZZZ	1.00	0935																										
ZZZZZZ	1.00	0939																										
ZZZZZZ	1.00	0943																										
ZZZZZZ	1.00	0946																										
ZZZZZZ	1.00	0950																										
ZZZZZZ	1.00	0954																										
ZZZZZZ	1.00	0958																										
CCV1	1.00	1001			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	1005			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1009			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071034002	1.00	1012			X	X		X	X		X		X		X						X	X		X	X			*
2071034004	1.00	1016			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071034005	1.00	1020			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071034006	1.00	1024			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071034007	1.00	1028			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1031																										
ZZZZZZ	1.00	1035																										
ZZZZZZ	1.00	1039																										
ZZZZZZ	1.00	1043																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A051915 0830

Start Date: 5/19/2015 End Date: 5/19/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1046																										
CCV2	1.00	1050			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	1054			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1058			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1101																										
ZZZZZZ	1.00	1105																										
ZZZZZZ	1.00	1109																										
ZZZZZZ	1.00	1113																										
2071034002	10.00	1132					X					X					X		X									
ZZZZZZ	10.00	1136																										
CCV3	1.00	1139			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	1143			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	1229																										
ZZZZZZ	5.00	1233																										
ZZZZZZ	5.00	1236																										
ZZZZZZ	5.00	1240																										
ZZZZZZ	5.00	1244																										
ZZZZZZ	5.00	1248																										
ZZZZZZ	5.00	1252																										
ZZZZZZ	5.00	1256																										
ZZZZZZ	5.00	1259																										
ZZZZZZ	5.00	1303																										
ZZZZZZ	1.00	1307																										
ZZZZZZ	1.00	1311																										
ZZZZZZ	1.00	1315																										
ZZZZZZ	50.00	1325																										
ZZZZZZ	1.00	1417																										
ZZZZZZ	1.00	1421																										
ZZZZZZ	1.00	1424																										

Total Metals by 6010C Summary Forms

6010C 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.968	1.000	97		90 - 110	P	5/20/2015	08:52	052015A 30
CCV	Iron	2.509	2.500	100		90 - 110	P	5/20/2015	09:09	052015A 30
CCV	Iron	2.513	2.500	101		90 - 110	P	5/20/2015	10:09	052015A 30
CCV	Iron	2.529	2.500	101		90 - 110	P	5/20/2015	10:54	052015A 30
CCV	Iron	2.484	2.500	99		90 - 110	P	5/20/2015	11:38	052015A 30
CCV	Iron	2.459	2.500	98		90 - 110	P	5/20/2015	13:08	052015A 30
LLCCV	Iron	0.057	0.060	95		70 - 130	P	5/20/2015	13:15	052015A 30

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.057	0.060	95		70 - 130	P	5/20/2015	09:05	052015A 3

6010C 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	09:01	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	10:13	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	10:57	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	11:42	052015A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/20/2015	13:11	052015A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2179722			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/20/2015	09:26	052015A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	116.5	125.0	93		80 - 120%	5/20/2015	09:15	052015A 3015
ICSAB									
	Iron	116.1	125.0	93		80 - 120%	5/20/2015	09:19	052015A 3015
ICSA									
	Iron	115.6	125.0	92		80 - 120%	5/20/2015	13:19	052015A 3015
ICSAB									
	Iron	119.0	125.0	95		80 - 120%	5/20/2015	13:22	052015A 3015

6010C 3015

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034002 **Client ID:** MRC-MW-93A-051415S **LIMS ID:** 2179724

Percent Solids for Sample: 0.00 **Spiked ID:** 2071034002S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	231.778		235.667		1.111	NSC		P

6010C 3015

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034002 **Client ID:** MRC-MW-93A-051415SD **LIMS ID:** 2179725

Percent Solids for Sample: 0.00 **Spiked ID:** 2071034002SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	mg/L	75 - 125	230.333		235.667		1.111	NSC		P

6010C 3015
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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034002S **Client ID:** MRC-MW-93A-051415SD **LIMS ID:** 2179725

Percent Solids for Sample: 0.00 **Duplicate ID:** 2071034002SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	mg/L	0 - 20	231.778		230.333		0.6		P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2179723									
	Iron	mg/L	1.11	1.118		101		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	73772						
2179722	MB for HBN 73772 [MDIG/50907	MB	QC-WAT	5/19/15	45.0	50.0	
2179723	LCS for HBN 73772 [MDIG/50907	LCS	QC-WAT	5/19/15	45.0	50.0	
2071034002	MRC-MW-93A-051415	SAM	WATER	5/19/15	45.0	50.0	
2071034002S	MRC-MW-93A-051415S	MS	WATER	5/19/15	45.0	50.0	
2071034002SD	MRC-MW-93A-051415SD	MSD	WATER	5/19/15	45.0	50.0	
2071034004	MRC-MW-21A-051415	SAM	WATER	5/19/15	45.0	50.0	
2071034005	MRC-MW-DUP07-051415	SAM	WATER	5/19/15	45.0	50.0	
2071034006	MRC-MW-21B-051415	SAM	WATER	5/19/15	45.0	50.0	
2071034007	MRC-MW-109B-051415	SAM	WATER	5/19/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0828												X													
ICAL2	1.00	0831												X													
ICAL3	1.00	0835												X													
ICAL4	1.00	0839												X													
ICAL5	1.00	0842												X													
ZZZZZZ	1.00	0848																									
ICV2	1.00	0852												X													
ZZZZZZ	1.00	0857																									
ICB2	1.00	0901												X													
CRDL1	1.00	0905												X													
CCV1	1.00	0909												X													
HIGH	1.00	0912												X													
ICS-A1	1.00	0915												X													
ICS-AB1	1.00	0919												X													
2179722	1.00	0926												X													
2179723	1.00	0930												X													
ZZZZZZ	1.00	0934																									
ZZZZZZ	1.00	0937																									
ZZZZZZ	1.00	0941																									
ZZZZZZ	1.00	0945																									
ZZZZZZ	1.00	0948																									
ZZZZZZ	1.00	0952																									
ZZZZZZ	1.00	0956																									
ZZZZZZ	1.00	1000																									
CCV2	1.00	1009												X													
CCB1	1.00	1013												X													
ZZZZZZ	1.00	1016																									
ZZZZZZ	1.00	1020																									
ZZZZZZ	1.00	1024																									
ZZZZZZ	2.00	1028																									
ZZZZZZ	1.00	1032																									
ZZZZZZ	1.00	1035																									
ZZZZZZ	1.00	1039																									
ZZZZZZ	1.00	1043																									
ZZZZZZ	1.00	1046																									
ZZZZZZ	1.00	1050																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
CCV3	1.00	1054												X																
CCB2	1.00	1057												X																
ZZZZZZ	1.00	1101																												
ZZZZZZ	1.00	1105																												
ZZZZZZ	1.00	1109																												
2071034002	1.00	1112												X																
2071034002S	1.00	1116												X																
2071034002SD	1.00	1120												X																
2071034004	1.00	1124												X																
2071034005	1.00	1127												X																
2071034006	1.00	1131												X																
2071034007	1.00	1135												X																
CCV4	1.00	1138												X																
CCB3	1.00	1142												X																
ZZZZZZ	1.00	1146																												
ZZZZZZ	1.00	1149																												
ZZZZZZ	1.00	1153																												
ZZZZZZ	1.00	1157																												
ZZZZZZ	1.00	1201																												
ZZZZZZ	1.00	1204																												
ZZZZZZ	1.00	1208																												
ZZZZZZ	1.00	1212																												
ZZZZZZ	1.00	1216																												
ZZZZZZ	1.00	1219																												
ZZZZZZ	1.00	1223																												
ZZZZZZ	1.00	1227																												
ZZZZZZ	1.00	1230																												
ZZZZZZ	1.00	1234																												
ZZZZZZ	1.00	1238																												
ZZZZZZ	1.00	1242																												
ZZZZZZ	2.00	1245																												
ZZZZZZ	2.00	1249																												
ZZZZZZ	5.00	1253																												
ZZZZZZ	1.00	1256																												
ZZZZZZ	1.00	1300																												
ZZZZZZ	1.00	1304																												

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052015A 3015

Start Date: 5/20/2015 End Date: 5/20/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV6	1.00	1308												X													
CCB5	1.00	1311												X													
LLCCV	1.00	1315												X													
ICS-A2	1.00	1319												X													
ICS-AB2	1.00	1322												X													
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1332																									
ZZZZZZ	1.00	1336																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1347																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1413																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1424																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1436																									
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1443																									
ZZZZZZ	1.00	1447																									
ZZZZZZ	1.00	1451																									
ZZZZZZ	1.00	1454																									
ZZZZZZ	1.00	1501																									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1508																									

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	12:47	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	13:53	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	14:07	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	14:12	052115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/21/2015	14:24	052115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/21/2015	14:37	052115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	5/21/2015	14:50	052115W
CCV	Mercury	0.0037	0.004	92		90 - 110	CV	5/21/2015	15:03	052115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/21/2015	15:16	052115W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	5/21/2015	15:30	052115W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	12:48	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	13:54	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:08	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:13	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:26	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:38	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	14:51	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	15:04	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	15:17	052115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/21/2015	15:31	052115W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2180381			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/21/2015	14:06	052115W
2181207			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/21/2015	15:15	052115W

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- 5a -
MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034.1.12IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034006 **Client ID:** MRC-MW-21B-051415S **LIMS ID:** 2181209

Percent Solids for Sample: 0.00 **Spiked ID:** 2071034006S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0052		0.0005	U	0.0050	104.00		CV

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034006 **Client ID:** MRC-MW-21B-051415SD **LIMS ID:** 2181210

Percent Solids for Sample: 0.00 **Spiked ID:** 2071034006SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0049		0.0005	U	0.0050	98.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071034006S **Client ID:** MRC-MW-21B-051415SD **LIMS ID:** 2181210

Percent Solids for Sample: 0.00 **Duplicate ID:** 2071034006SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0052		0.0049		5.9		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2180382									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2181208									
	Mercury	mg/L	0.0020	0.0020		100		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh

SDG No.: TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS

Method: CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	74116						
2180381	MB for HBN 74116 [MDIG/50930	MB	QC-WAT	5/21/15	25.0	25.0	
2180382	LCS for HBN 74116 [MDIG/50930	LCS	QC-WAT	5/21/15	25.0	25.0	
2071034002	MRC-MW-93A-051415	SAM	WATER	5/21/15	25.0	25.0	

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-034

Contract: TMM034|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	74377						
2181207	MB for HBN 74377 [MDIG/50952	MB	QC-WAT	5/21/15	25.0	25.0	
2181208	LCS for HBN 74377 [MDIG/50952	LCS	QC-WAT	5/21/15	25.0	25.0	
2071034004	MRC-MW-21A-051415	SAM	WATER	5/21/15	25.0	25.0	
2071034005	MRC-MW-DUP07-051415	SAM	WATER	5/21/15	25.0	25.0	
2071034006	MRC-MW-21B-051415	SAM	WATER	5/21/15	25.0	25.0	
2071034006S	MRC-MW-21B-051415S	MS	WATER	5/21/15	25.0	25.0	
2071034006SD	MRC-MW-21B-051415SD	MSD	WATER	5/21/15	25.0	25.0	
2071034007	MRC-MW-109B-051415	SAM	WATER	5/21/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1240																X									
Standard #1 (0.2ppb	1.00	1241																X									
	1.00	1242																X									
	1.00	1243																X									
	1.00	1244																X									
	1.00	1246																X									
ICV1	1.00	1247																X									
ICB1	1.00	1248																X									
ZZZZZZ	1.00	1249																									
ZZZZZZ	1.00	1250																									
ZZZZZZ	1.00	1252																									
ZZZZZZ	1.00	1253																									
ZZZZZZ	1.00	1254																									
ZZZZZZ	1.00	1255																									
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1257																									
ZZZZZZ	1.00	1258																									
ZZZZZZ	1.00	1259																									
ZZZZZZ	1.00	1300																									
ZZZZZZ	1.00	1301																									
ZZZZZZ	1.00	1302																									
ZZZZZZ	1.00	1303																									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1306																									
ZZZZZZ	1.00	1307																									
ZZZZZZ	1.00	1308																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1310																									
ZZZZZZ	1.00	1311																									
ZZZZZZ	1.00	1312																									
ZZZZZZ	1.00	1313																									
ZZZZZZ	1.00	1314																									
ZZZZZZ	1.00	1315																									
ZZZZZZ	1.00	1316																									
ZZZZZZ	1.00	1317																									
ZZZZZZ	1.00	1319																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1320																										
ZZZZZZ	1.00	1321																										
ZZZZZZ	1.00	1322																										
ZZZZZZ	1.00	1323																										
ZZZZZZ	1.00	1324																										
ZZZZZZ	1.00	1325																										
ZZZZZZ	1.00	1326																										
ZZZZZZ	1.00	1327																										
ZZZZZZ	1.00	1328																										
ZZZZZZ	1.00	1330																										
ZZZZZZ	1.00	1331																										
ZZZZZZ	1.00	1332																										
ZZZZZZ	1.00	1333																										
ZZZZZZ	1.00	1334																										
ZZZZZZ	1.00	1335																										
ZZZZZZ	1.00	1336																										
ZZZZZZ	1.00	1337																										
ZZZZZZ	1.00	1339																										
ZZZZZZ	1.00	1340																										
ZZZZZZ	1.00	1341																										
ZZZZZZ	1.00	1342																										
ZZZZZZ	1.00	1343																										
ZZZZZZ	1.00	1344																										
ZZZZZZ	1.00	1345																										
ZZZZZZ	1.00	1346																										
ZZZZZZ	1.00	1347																										
ZZZZZZ	1.00	1349																										
ZZZZZZ	1.00	1350																										
ZZZZZZ	1.00	1351																										
ZZZZZZ	1.00	1352																										
CCV5	1.00	1353																X										
CCB5	1.00	1354																X										
ZZZZZZ	1.00	1355																										
ZZZZZZ	1.00	1357																										
ZZZZZZ	1.00	1358																										
ZZZZZZ	1.00	1359																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1400																									
ZZZZZZ	1.00	1401																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1405																									
2180381	1.00	1406																X									
CCV6	1.00	1407																X									
CCB6	1.00	1408																X									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1410																									
CCV7	1.00	1412																X									
CCB7	1.00	1413																X									
2180382	1.00	1414																X									
ZZZZZZ	1.00	1415																									
ZZZZZZ	1.00	1416																									
ZZZZZZ	1.00	1417																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1419																									
ZZZZZZ	1.00	1420																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1422																									
ZZZZZZ	1.00	1423																									
CCV8	1.00	1424																X									
CCB8	1.00	1426																X									
ZZZZZZ	1.00	1427																									
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1429																									
ZZZZZZ	1.00	1430																									
ZZZZZZ	1.00	1431																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1433																									
ZZZZZZ	1.00	1434																									
ZZZZZZ	1.00	1435																									
ZZZZZZ	1.00	1436																									
CCV9	1.00	1437																X									
CCB9	1.00	1438																X									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1439																										
ZZZZZZ	1.00	1441																										
2071034002	1.00	1442																X										
ZZZZZZ	1.00	1443																										
ZZZZZZ	1.00	1444																										
ZZZZZZ	1.00	1445																										
ZZZZZZ	1.00	1446																										
ZZZZZZ	1.00	1447																										
ZZZZZZ	1.00	1448																										
ZZZZZZ	1.00	1449																										
CCV10	1.00	1450																X										
CCB10	1.00	1451																X										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1453																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1456																										
ZZZZZZ	1.00	1457																										
ZZZZZZ	1.00	1458																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1500																										
ZZZZZZ	1.00	1501																										
ZZZZZZ	1.00	1502																										
CCV11	1.00	1503																X										
CCB11	1.00	1504																X										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1507																										
ZZZZZZ	1.00	1508																										
ZZZZZZ	1.00	1509																										
ZZZZZZ	1.00	1510																										
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1512																										
ZZZZZZ	1.00	1513																										
ZZZZZZ	1.00	1514																										
2181207	1.00	1515																X										
CCV12	1.00	1516																X										
CCB12	1.00	1517																X										

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM034|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-034

Instrument ID Number: Cetac Hg Method: CV Run Number: 052115W

Start Date: 5/21/2015 End Date: 5/21/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2181208	1.00	1519																X									
2071034004	1.00	1520																X									
2071034005	1.00	1521																X									
2071034006	1.00	1522																X									
2071034006S	1.00	1523																X									
2071034006SD	1.00	1524																X									
2071034007	1.00	1525																X									
ZZZZZZ	1.00	1526																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1529																									
CCV13	1.00	1530																X									
CCB13	1.00	1531																X									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1534																									
ZZZZZZ	1.00	1535																									
ZZZZZZ	1.00	1536																									
ZZZZZZ	1.00	1540																									
ZZZZZZ	1.00	1542																									
ZZZZZZ	1.00	1544																									
ZZZZZZ	1.00	1545																									

Anions by Method 300 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-034

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/15/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/15/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	1.0	U	1.0	U								
Nitrite-Nitrogen	0.10	U	0.10	U								
Nitrate-Nitrogen	0.10	U	0.10	U								
Sulfate	1.0	U	1.0	U								

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-034

Instrument ID: ICS2100 (IC-7)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Conc. Recovered	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	19.7	99		90-110	20.0	19.7	99					90-110
Nitrite-Nitrogen	0.50	0.54	108		90-110	0.50	0.52	104					90-110
Nitrate-Nitrogen	2.50	2.47	99		90-110	2.50	2.48	99					90-110
Sulfate	20.0	19.8	99		90-110	20.0	20.0	100					90-110
Chloride	40.0	38.2	95		90-110	40.0	--	--					90-110
Nitrite-Nitrogen	1.00	1.09	109		90-110	1.00	--	--					90-110
Nitrate-Nitrogen	5.00	4.75	95		90-110	5.00	--	--					90-110
Sulfate	40.0	37.1	93		90-110	40.0	--	--					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-034

Instrument ID: ICS2100 (IC-7)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.32	93		90-110	2.50	2.28	91					90-110
Nitrite-Nitrogen	0.50	0.48	96		90-110	0.50	0.49	98					90-110
Nitrate-Nitrogen	0.50	0.48	96		90-110	0.50	0.46	92					90-110
Sulfate	2.50	2.48	99		90-110	2.50	2.47	99					90-110
Chloride	5.00	4.82	96		90-110	5.00	--	--					90-110
Nitrite-Nitrogen	1.00	0.99	99		90-110	1.00	--	--					90-110
Nitrate-Nitrogen	1.00	0.96	96		90-110	1.00	--	--					90-110
Sulfate	5.00	4.99	100		90-110	5.00	--	--					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-034

Matrix (soil/water): water
Lab Sample ID: 2178252
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/15/15
Instrument ID: ICS2100 (IC-7)
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	18.9	95		90-110
Nitrite-nitrogen	0.50	0.54	108		90-110
Nitrate-nitrogen	2.50	2.37	95		90-110
Sulfate	20.0	19.0	95		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-034

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/15/2015
Instrument ID: ICS2100 (IC-7)
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.26	90		90-110
Nitrite-nitrogen	0.50	0.47	94		90-110
Nitrate-nitrogen	0.50	0.47	94		90-110
Sulfate	2.50	2.43	97		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Orthophosphate by Method 365.3 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 365.3 SDG No.: TMM-034

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/15/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/15/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Orthophosphate	0.02	U	0.02	U								

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 365.3 SDG No.: TMM-034

Instrument ID: DR5000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Orthophosphate	0.200	0.198	99		90-110	0.200	--	--					90-110
						0.800	0.778	97					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Dissolved TOC by Method 9060 Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 9060A

SDG No.: TMM-034

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/20/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/20/15	(2)	(1)5/20/15	(2)	(1)	(2)	Preparation Blank A ID: DISS BLANK (1)5/20/15	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U			--	--		
TOC, Dissolved	--	--	--	--	--	--			1.0	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 9060A

SDG No.: TMM-034

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/20/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/20/15	Recovery (%)	(2)	Conc. Recovered (1)5/20/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	1.03	103		85-115	5.00	5.10	102		--	--		90-110
						8.00	--	--		7.96	100		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 9060A
SDG No.: TMM-034

Matrix (soil/water): water
Lab Sample ID: 5.0 mg/L QC DISS
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/20/2015
Instrument ID: Vario TOC
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Organic Carbon, Dissolved	5.00	5.06	101		90-110

(1) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Total Alkalinity by Method S2320W Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2320B SDG No.: TMM-034

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/15/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/15/15	(2)	(1)5/15/15	(2)	(1)	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Alkalinity	1.28	J	1.82	J	1.63	J						

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 2320B

SDG No.: TMM-034

Instrument ID: PC-Titration Plus

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Conc. Recovered (1)5/15/15	Recovery (%)	(2)	Acc. Limit (%)
Total Alkalinity	50	50	100		90-110	50	50	100		48	97		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Total Dissolved Solids by Method S2540CW Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 2540C SDG No.: TMM-034

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)	(2)	Continuing Calibration Blanks (mg/L) (1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2178727 (1) 5/16/15	(2)	Preparation Blank B ID: (1)	(2)
Total Dissolved Solids									5	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 2540C
SDG No.: TMM-034

Matrix (soil/water): water
Lab Sample ID: 2178728
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/16/2015
Instrument ID: N/A
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Dissolved Solids	500	528	106		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Total Ammonia by Method S4500W Summary Forms

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D

SDG No.: TMM-034

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)5/20/15	(2)	Continuing Calibration Blanks (mg/L) (1)5/20/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID: 2179819 (1)5/20/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.10	U	0.10	U					0.044	J		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-034

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)5/20/15	Recovery (%) (2)		Acc. Limit (%)	True Conc.	Conc. Recovered (1)5/20/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	9.30	93		90-110	10.0	9.96	100					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 4500NH3D
SDG No.: TMM-034

Matrix (soil/water): water
Lab Sample ID: 2179820
Units: mg/L
Lab File ID: N/A
Date Analyzed: 5/20/2015
Instrument ID: ISE
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.97	100		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Subcontracted Data

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513939

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 448332
Analyzed: 05/26/2015 10:58
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 448333
Analyzed: 05/26/2015 11:17
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.96	5.00	99.3	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1513562001	**MS:** 448334	**MSD:** 448335
Analyzed: 05/26/2015 11:36	**Analyzed:** 05/26/2015 11:55	**Analyzed:** 05/26/2015 12:14
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	4.85	5	97.0	85.3	112.8	4.58	91.6	5.74	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1513939

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	448328			**CCV:**	448336	
Analyzed:	05/26/2015 09:41			**Analyzed:**	05/26/2015 14:09	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.6	25.0	102	25.1	25.0	100

Interference Check Sample

ICSA:	448331		
Analyzed:	05/26/2015 10:38		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	448330			**LODV:**	448337	
Analyzed:	05/26/2015 10:19			**Analyzed:**	05/26/2015 14:28	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.122	0.100	122	0.107	0.100	107

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	6/1/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Sample calc - VOC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-93A-051415

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-034

Matrix (soil/water): WATER Lab Sample ID: 2071034002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15051978.D

Level (low/med): Date Received: 5/14/15

% Moisture: not dec. 100.0 Date Analyzed: 5/20/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	4.4	J
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.40	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.25	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	0.39	J
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	2.1	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

Sample calc - VOC

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150519A.b\1505197
Lab Smp Id: 2071034002 Client Smp ID: MRC-MW-93A-051415
Inj Date : 20-MAY-2015 02:02
Operator : CJG Inst ID: ms15.i
Smp Info : 2071034002;;1;;;;;
Misc Info : ZZ VOMS 35956 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150519A.b\15-8260
Meth Date : 20-May-2015 13:26 joshua Quant Type: ISTD
Cal Date : 19-MAY-2015 19:44 Cal File: 15051956.D
Als bottle: 28
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

calibration RRF = 0.3543

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	1.395	1.395	(0.357)	3550	0.38828	0.388281(a)	
3 Vinyl Chloride	62	Compound Not Detected.						
4 Bromomethane	94	1.673	1.668	(0.428)	1864	0.40286	0.402862(a)	
5 Chloroethane	64	Compound Not Detected.						
6 Pentane								
7 Trichlorof								
8 Dichlorofl								
9 Ethyl Ethe								
10 1,1-Dichlo								
11 Freon 113								
12 Carbon Disulfide	76	2.180	2.180	(0.558)	3730	0.24920	0.249196(a)	
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	2.492	2.497	(0.637)	1796	4.42856	4.42856(a)	
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

(3550*30)/(774163*0.3543) = 0.388 ug/L

Sample calc - VOC

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.201	3.201	(0.819)	21595	2.07724	2.07724	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.446	(0.880)	261999	28.9777	28.9777	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	286464	30.5109	30.5109	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	774163	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	28000	2.87958	2.87958	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.865	4.860	(0.823)	718675	28.3358	28.3358	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

Sample calc - SVOC

FORM 1 Tetra Tech Pittsbur SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MRC-MW-2
1A-051415

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM034

Matrix: (soil/water) WATER Lab Sample ID: 2071034004

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12053006

Level: (low/med) LOW Date Received: 05/14/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/30/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/30/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	1.5	_____

FORM I SV

Sample calc - SVOC

ALS Environmental Services

1,4-Dioxane, EPA Method 522

Data file : \\ALMDTWS014\TargetData\Chem2\ms12.i\12-2015\12150530.b\12053006
Lab Smp Id: 2071034004 Client Smp ID: MRC-MW-21A-051415
Inj Date : 30-MAY-2015 16:07
Operator : GEC Inst ID: ms12.i
Smp Info : 2071034004;1;;;;;100;;2000
Misc Info : ZZ SVMS 23550 522
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms12.i\12-2015\12150530.b\12_522_1
Meth Date : 31-May-2015 08:59 ms12.i Quant Type: ISTD
Cal Date : 13-AUG-2014 20:46 Cal File: 12081311.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7059

Concentration Formula: Amt * DF * Uf * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	2000.000	Volume of final extract (uL)
Vo	100.000	Sample Volume extracted(mL)
Vi	1.000	Volume injected (uL)
DF	1.000	sample dilution
Cpnd Variable		Local Compound Variable

calibration RRF = 0.7837

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
* 15 Tetrahydrofuran-d8	46	6.353	6.353	(1.000)	53763	0.50000		
$ 18 1,4-Dioxane-d8	96	8.363	8.363	(1.316)	31693	0.41410	8.28194	
19 1,4-Dioxane	88	8.436	8.436	(1.328)	6170	0.07322	1.46431	

(6170*0.5)/(53763*0.7837) =0.073 * 200 uL/100 = 1.46 ug/L

Sample Report

Sample calc - Metals

Sample Table

Sample Name	2071034002
Data File Name	028SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\A051915.b
Acq Date Time	2015-05-19T10:12:52-04:00
Sample Type	Sample
Dilution	1
Comment	48416 MO
ISTD Ref FileName	002CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail
Vial	3111

Mn, Co, Ni, Ba 1/10

MRC-MW-93A-051415

Arsenic result: 0.041 mg/L

3.957 *0.05 L/45 g =
0.0414 mg/L

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
V	51	1	No Gas	119.548	119.548	1.13	4628168	0.00	1000	
Cr	52	1	No Gas	158.978	158.978	0.56	5416800	0.00	1000	
Mn	55	1	No Gas	8790.853	8790.853	0.71	383524429	0.00	8000	
Co	59	1	No Gas	3924.819	3924.819	0.93	143050542	0.00	1000	>LDR
Ni	60	1	No Gas	4081.707	4081.707	0.79	33458765	0.01	1000	>LDR
Cu	63	1	No Gas	273.731	273.731	0.79	5471675	0.01	5000	
Sr	88	1	No Gas	1013.319	1013.319	0.72	58827848	0.00	1000	
Ag	107	1	No Gas	0.217	0.217	4.35	5420	0.00	1000	
Al	27	1	No Gas	26170.393	26170.393	1.22	633797175	0.00	90000	
Sn	118	1	No Gas	7.296	7.296	0.53	108846	0.01	1000	
Ti	47	1	No Gas	113.027	113.027	0.97	327888	0.03	2000	
Zn	66	1	No Gas	3190.368	3190.368	0.44	14744820	0.02	5000	
As	75	3	HEHe	37.324	37.324	0.96	12789	0.29	1000	
As	75	1	No Gas	3.957	3.957	11.38	44934	0.01	1000	
Sb	121	1	No Gas	1.090	1.090	4.60	19529	0.01	1000	
Hg	201	1	No Gas	0.101	0.101	9.13	207	0.05	4	
Be	9	1	No Gas	66.244	66.244	1.63	312887	0.02	1000	
Pb	208	1	No Gas	77.404	77.404	0.36	3469938	0.00	1000	
Se	82	1	No Gas	18.065	18.065	3.98	5677	0.32	1000	
Mo	98	1	No Gas	13.343	13.343	1.37	189458	0.01	3000	
Ba	137	1	No Gas	939.833	939.833	0.77	9046843	0.01	1000	
Tl	205	1	No Gas	0.736	0.736	3.21	26041	0.00	1000	
U	238	1	No Gas	17.036	17.036	0.52	769924	0.00	1000	
Na	23	2	He	468174.022	468174.022	2.72	104682255	0.45	90000	>LDR
Mg	24	2	He	91823.861	91823.861	2.06	9306261	0.99	90000	
K	39	2	He	7692.869	7692.869	2.86	409677	1.88	90000	
Se	82	3	HEHe	230.368	230.368	1.48	4948	4.66	1000	
Cd	114	1	No Gas	4.741	4.741	2.21	48226	0.01	1000	
Ca	44	1	No Gas	201937.377	201937.377	0.58	175697457	0.11	90000	>LDR
B	11	1	No Gas	60.002	60.002	3.44	147124	0.04	2000	
Fe	56	3	HEHe	194654.641	194654.641	0.58	837417774	0.02	90000	>LDR
Kr	84	1	No Gas	10400.779	10400.779	1.76	344955	3.02	100000	
Se	78	3	HEHe	103.877	103.877	0.81	4584	2.27	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Sc	45	1	No Gas	7748529	2.08	7471348	103.71	70	120	
Sc	45	2	He	64005	2.21	60831	105.22	70	120	
Ge	72	1	No Gas	988978	2.77	827329	119.54	70	120	
In	115	1	No Gas	4864771	1.58	5423756	89.69	70	120	
Tb	159	1	No Gas	9393293	1.68	6967589	134.81	70	120	ISTD Failed
Bi	209	1	No Gas	3241142	0.92	3767563	86.03	70	120	
Sc	45	3	HEHe	148904	0.59	133890	111.21	70	120	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 26, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/TOTAL METALS/DISSOLVED ORGANIC CARBON/PERCHLORATE**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2071807

SAMPLES:

7/Aqueous/VOCs

MRC-MW-109A-051815	MRC-MW-111A-051815	MRC-MW-111B-051815
MRC-MW-90B-051815	MRC-MW-98A-051815	MRC-MW-98B-051815
TB-0518-15		

5/Aqueous/1,4-Dioxane

MRC-MW-111A-051815	MRC-MW-111B-051815	MRC-MW-90B-051815
MRC-MW-98A-051815	MRC-MW-98B-051815	

4/Aqueous/Total Metals

MRC-MW-109A-051815	MRC-MW-111B-051815	MRC-MW-98A-051815
MRC-MW-98B-051815	MRC-MW-DUP08-051815	

2/Aqueous/Perchlorate

MRC-MW-109A-051815	MRC-MW-90B-051815

Overview

The sample set for LMC-MRC, SDG 2071807 consisted of seven (7) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), 1,4-dioxane, select total metals, and/or perchlorate. One field duplicate sample pair was included in this SDG: MRC-MW-DUP08-051815.

The samples were collected by Tetra Tech, Inc. on May 18, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, 9060A, and EPA Method 6850 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Major - None

Minor

- The following VOCs were detected in the laboratory blanks at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Chlorobenzene(1)	0.25	1.25
Bromomethane(2)	0.43	2.15
Carbon Disulfide(2)	0.41	2.05
1,3-Dichlorobenzene(2)	0.25	1.25
1,4-Dichlorobenzene(2)	0.37	3.5
1,2,3-Trichlorobenzene(3)	1.2	6
1,2,4-Trichlorobenzene(3)	1.0	5

  1- Maximum concentration detected in the method blank 2181443 affecting all samples, except MRC-MW-109A-051815.
  2- Maximum concentration detected in the method blank 2183121 affecting sample MRC-MW-109A-051815.
  3- Maximum concentration detected in the method blank 2184389 affecting diluted samples MRC-MW-111B-051815 and MRC-MW-98B-051815.

  An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetected (U). The trip blank was not qualified for laboratory blank contamination.

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

The laboratory noted on the chain of custody that sample MRC-MW-90B-051815 was not received for total metals analysis and sample MRC-MW-109A-051815 was not received for 1,4-dioxane analysis.

Results for several VOCs exceeded the calibration limit and were therefore analyzed at dilution.

VOC continuing calibration verification on 5/30/2015 @ 00:01 had percent differences (%Ds) for bromoform, 1,2-bromo-3-chloropropane, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene that were greater than the quality control limit (20%) affecting diluted samples MRC-MW-111B-051815 and MRC-MW-98B-051815. No action was taken as results for these compounds were reported from the non-diluted analysis.

VOC laboratory control sample (LCS) (2184390) percent recoveries (%Rs) were less than quality control (QC) limits for bromoform and greater than QC limits for 1,2-dibromoethane and methylene chloride affecting diluted samples MRC-MW-111B-051815 and MRC-MW-98B-051815. No action was taken as results for these compounds were reported from the non-diluted analysis.

Executive Summary

Laboratory Performance: Contaminants were detected in the laboratory method blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 06247	NSAMPLE	MRC-MW-109A-051815			MRC-MW-111A-051815			MRC-MW-111B-051815			MRC-MW-111B-051815-DL		
SDG: 2071807	LAB_ID	2071807004			2071807002			2071807003			2071807003		
FRACTION: OV	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		1.7					
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		2.4					
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U				
1,1-DICHLOROETHANE		0.28	U		0.28	U		39.3					
1,1-DICHLOROETHENE		1.7			0.29	U					463		
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U				
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U				
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U				
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U				
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U				
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U				
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U				
1,4-DIOXANE		58.9	U		58.9	U		140	J	P			
2-BUTANONE		1.8	U		1.8	U		1.8	U				
2-HEXANONE		1.3	U		1.3	U		1.3	U				
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U				
ACETONE		8	J	P	3.1	U		3.1	U				
BENZENE		0.23	U		0.23	U		7.9					
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U				
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U				
BROMOFORM		0.4	U		0.4	U		0.4	U				
BROMOMETHANE		0.39	U		0.39	U		0.39	U				
CARBON DISULFIDE		0.35	U	A	0.29	J	P	0.23	U				
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U				
CHLOROBENZENE		0.19	U		0.2	U	A	0.19	U				
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U				
CHLOROETHANE		0.33	U		0.33	U		0.33	U				
CHLOROFORM		0.21	U		0.21	U		0.95	J	P			
CHLOROMETHANE		0.31	U		0.31	U		0.31	U				
CIS-1,2-DICHLOROETHENE		45.4			0.32	U		28.4					
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U				
CYCLOHEXANE		0.29	U		0.29	U		0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-90B-051815			MRC-MW-98A-051815			MRC-MW-98B-051815			MRC-MW-98B-051815-DL		
SDG: 2071807	LAB_ID	2071807005			2071807006			2071807007			2071807007		
FRACTION: OV	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		41.7					
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		1.8					
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U				
1,1-DICHLOROETHANE		0.28	U		3.8			137					
1,1-DICHLOROETHENE		15.6			6.3						345		
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U				
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U				
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U				
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U				
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U				
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U				
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U				
1,4-DIOXANE		58.9	U		58.9	U		121	J	P			
2-BUTANONE		1.8	U		1.8	U		1.8	U				
2-HEXANONE		1.3	U		1.3	U		1.3	U				
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U				
ACETONE		3.1	U		3.1	U		3.1	U				
BENZENE		0.23	U		0.23	U		4.2					
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U				
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U				
BROMOFORM		0.4	U		0.4	U		0.4	U				
BROMOMETHANE		0.39	U		0.39	U		0.39	U				
CARBON DISULFIDE		0.65	J	P	0.23	U		0.23	U				
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U				
CHLOROBENZENE		0.19	U		0.19	U		0.19	U				
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U				
CHLOROETHANE		0.33	U		0.33	U		40.1					
CHLOROFORM		0.7	J	P	0.21	U		0.99	J	P			
CHLOROMETHANE		0.57	J	P	0.31	U		0.31	U				
CIS-1,2-DICHLOROETHENE		2.9			1.2			31.5					
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U				
CYCLOHEXANE		0.29	U		0.29	U		0.29	U				

PROJ_NO: 06247	NSAMPLE	TB-0518-15		
SDG: 2071807	LAB_ID	2071807001		
FRACTION: OV	SAMP_DATE	5/18/2015		
MEDIA: WATER	QC_TYPE	TB		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U	
1,1-DICHLOROETHANE		0.28	U	
1,1-DICHLOROETHENE		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U	
1,2-DIBROMOETHANE		0.28	U	
1,2-DICHLOROBENZENE		0.38	U	
1,2-DICHLOROETHANE		0.32	U	
1,2-DICHLOROPROPANE		0.24	U	
1,3-DICHLOROBENZENE		0.25	U	
1,4-DICHLOROBENZENE		0.27	U	
1,4-DIOXANE		58.9	U	
2-BUTANONE		4.6	J	P
2-HEXANONE		1.3	U	
4-METHYL-2-PENTANONE		1.5	U	
ACETONE		8.2	J	P
BENZENE		0.23	U	
BROMOCHLOROMETHANE		0.32	U	
BROMODICHLOROMETHANE		0.27	U	
BROMOFORM		0.4	U	
BROMOMETHANE		0.39	U	
CARBON DISULFIDE		0.31	J	P
CARBON TETRACHLORIDE		0.31	U	
CHLOROBENZENE		0.29	J	P
CHLORODIBROMOMETHANE		0.45	U	
CHLOROETHANE		0.33	U	
CHLOROFORM		0.21	U	
CHLOROMETHANE		0.31	U	
CIS-1,2-DICHLOROETHENE		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	U	
CYCLOHEXANE		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-109A-051815			MRC-MW-111A-051815			MRC-MW-111B-051815			MRC-MW-111B-051815-DL		
SDG: 2071807	LAB_ID	2071807004			2071807002			2071807003			2071807003		
FRACTION: OV	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U				
ETHYLBENZENE		0.34	U		0.34	U		0.34	U				
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U				
M+P-XYLENES		0.52	U		0.52	U		0.52	U				
METHYL ACETATE		0.32	U		0.32	U		0.32	U				
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U				
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U				
O-XYLENE		0.33	U		0.33	U		0.33	U				
STYRENE		0.24	U		0.24	U		0.24	U				
TETRACHLOROETHENE		0.35	U		0.35	U		4.8					
TOLUENE		0.4	J	P	0.23	U		0.23	U				
TRANS-1,2-DICHLOROETHENE		1.2			0.26	U		0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U				
TRICHLOROETHENE		0.33	U		0.38	J	P				1270		
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U				
VINYL CHLORIDE		34			0.3	U		1.2					

PROJ_NO: 06247	NSAMPLE	MRC-MW-90B-051815			MRC-MW-98A-051815			MRC-MW-98B-051815			MRC-MW-98B-051815-DL		
SDG: 2071807	LAB_ID	2071807005			2071807006			2071807007			2071807007		
FRACTION: OV	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U				
ETHYLBENZENE		0.34	U		0.34	U		0.34	U				
ISOPROPYLBENZENE		0.22	U		0.22	U		0.46	J	P			
M+P-XYLENES		0.52	U		0.52	U		0.52	U				
METHYL ACETATE		0.32	U		0.32	U		0.32	U				
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U				
METHYLENE CHLORIDE		0.45	U		0.45	U		9.1					
O-XYLENE		0.33	U		0.33	U		0.33	U				
STYRENE		0.24	U		0.24	U		0.24	U				
TETRACHLOROETHENE		0.35	U		0.51	J	P	6.1					
TOLUENE		0.23	U		0.23	U		0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U				
TRICHLOROETHENE		102			9.1						554		
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.45	J	P			
VINYL CHLORIDE		0.3	U		0.3	U		1.6					

PROJ_NO: 06247	NSAMPLE	TB-0518-15		
SDG: 2071807	LAB_ID	2071807001		
FRACTION: OV	SAMP_DATE	5/18/2015		
MEDIA: WATER	QC_TYPE	TB		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U	
ETHYLBENZENE		0.34	U	
ISOPROPYLBENZENE		0.22	U	
M+P-XYLENES		0.52	U	
METHYL ACETATE		0.32	U	
METHYL CYCLOHEXANE		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	U	
METHYLENE CHLORIDE		0.45	U	
O-XYLENE		0.33	U	
STYRENE		0.24	U	
TETRACHLOROETHENE		0.35	U	
TOLUENE		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U	
TRICHLOROETHENE		0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U	
VINYL CHLORIDE		0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-111A-051815			MRC-MW-111B-051815-DL			MRC-MW-90B-051815			MRC-MW-98A-051815		
SDG: 2071807	LAB_ID	2071807002			2071807003			2071807005			2071807006		
FRACTION: OS	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.75			182			5.4			3.8		

PROJ_NO: 06247	NSAMPLE	MRC-MW-98B-051815-DL		
SDG: 2071807	LAB_ID	2071807007		
FRACTION: OS	SAMP_DATE	5/18/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,4-DIOXANE		138		

PROJ_NO: 06247	NSAMPLE	MRC-MW-109A-051815			MRC-MW-90B-051815		
SDG: 2071807	LAB_ID	2071807004			2071807005		
FRACTION: MISC	SAMP_DATE	5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERCHLORATE		0.06	U		0.62		

PROJ_NO: 06247	NSAMPLE	MRC-MW-109A-051815			MRC-MW-111B-051815			MRC-MW-98A-051815			MRC-MW-98B-051815		
SDG: 2071807	LAB_ID	2071807004			2071807003			2071807006			2071807007		
FRACTION: M	SAMP_DATE	5/18/2015			5/18/2015			5/18/2015			5/18/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.0044			0.0038			0.001	U		0.001	U	
BARIUM		0.19			0.09			0.045			0.041		
BERYLLIUM		0.00067	J	P	0.00046	J	P	0.0003	U		0.0084		
CADMIUM		0.00037	U		0.00037	U		0.00037	U		0.00037	U	
CHROMIUM		0.012			0.00074	U		0.0061			0.00074	U	
COBALT		0.12			0.063			0.0019	U		0.087		
COPPER		0.014			0.0019	U		0.0019	U		0.0019	U	
IRON		67.9			40.1			0.33			18.5		
LEAD		0.0059			0.00074	U		0.00074	U		0.00074	U	
MANGANESE		1.4			1.2			0.028			2.7		
MERCURY		0.00017	U		0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM		0.00079	J	P	0.00074	U		0.00074	U		0.00074	U	
NICKEL		0.073			0.11			0.0019	U		0.13		
SELENIUM		0.0019	U		0.0019	U		0.0019	U		0.0019	U	
SILVER		0.00074	U		0.00074	U		0.00074	U		0.00074	U	
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.026			0.00074	U		0.00074	U		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-DUP08-051815		
SDG: 2071807	LAB_ID	2071807008		
FRACTION: M	SAMP_DATE	5/18/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF	MRC-MW-98A-051815		
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.001	U	
BARIUM		0.046		
BERYLLIUM		0.0003	U	
CADMIUM		0.00037	U	
CHROMIUM		0.0065		
COBALT		0.0019	U	
COPPER		0.0019	U	
IRON		0.34		
LEAD		0.00074	U	
MANGANESE		0.037		
MERCURY		0.00017	U	
MOLYBDENUM		0.00074	U	
NICKEL		0.0019	U	
SELENIUM		0.0019	U	
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.00079	J	P

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807001** Date Collected: 5/18/2015 00:00 Matrix: Water

Sample ID: **TB-0518-15** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	8.2J	J	ug/L	10.0	3.1	SW846 8260C		5/22/15 02:24	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 02:24	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:24	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:24	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 02:24	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 02:24	CJG	A
2-Butanone	4.6J	J	ug/L	10.0	1.8	SW846 8260C		5/22/15 02:24	CJG	A
Carbon Disulfide	0.31J	J	ug/L	1.0	0.23	SW846 8260C		5/22/15 02:24	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:24	CJG	A
Chlorobenzene	0.29J	J	ug/L	1.0	0.19	SW846 8260C		5/22/15 02:24	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 02:24	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/22/15 02:24	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:24	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:24	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 02:24	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:24	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 02:24	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 02:24	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:24	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:24	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:24	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:24	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:24	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:24	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 02:24	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:24	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:24	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/22/15 02:24	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 02:24	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:24	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 02:24	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 02:24	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 02:24	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 02:24	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807001** Date Collected: 5/18/2015 00:00 Matrix: Water

Sample ID: **TB-0518-15** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/22/15 02:24	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 02:24	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 02:24	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 02:24	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/22/15 02:24	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 02:24	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/22/15 02:24	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/22/15 02:24	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 02:24	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 02:24	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 02:24	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:24	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/22/15 02:24	CJG	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.2		%	62 - 133	SW846 8260C		5/22/15 02:24	CJG	A
4-Bromofluorobenzene (S)	90.1		%	79 - 114	SW846 8260C		5/22/15 02:24	CJG	A
Dibromofluoromethane (S)	93.2		%	78 - 116	SW846 8260C		5/22/15 02:24	CJG	A
Toluene-d8 (S)	92.9		%	76 - 127	SW846 8260C		5/22/15 02:24	CJG	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807002** Date Collected: 5/18/2015 09:26 Matrix: Water

Sample ID: **MRC-MW-111A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/22/15 02:42	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 02:42	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:42	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:42	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 02:42	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 02:42	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/22/15 02:42	CJG	A
Carbon Disulfide	0.29J	J	ug/L	1.0	0.23	SW846 8260C		5/22/15 02:42	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:42	CJG	A
Chlorobenzene	0.20J	J	ug/L	1.0	0.19	SW846 8260C		5/22/15 02:42	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 02:42	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:42	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/22/15 02:42	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:42	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:42	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 02:42	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:42	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 02:42	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 02:42	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:42	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:42	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:42	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:42	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:42	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:42	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:42	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 02:42	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:42	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:42	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/22/15 02:42	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 02:42	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:42	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 02:42	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 02:42	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 02:42	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 02:42	CJG	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807002** Date Collected: 5/18/2015 09:26 Matrix: Water

Sample ID: **MRC-MW-111A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:42	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/22/15 02:42	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/22/15 02:42	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 02:42	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/22/15 02:42	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/22/15 02:42	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/22/15 02:42	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/22/15 02:42	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/22/15 02:42	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/22/15 02:42	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:42	CJG	A
Trichloroethene	0.38J	J	ug/L	1.0	0.33	SW846 8260C			5/22/15 02:42	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 02:42	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/22/15 02:42	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:42	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/22/15 02:42	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133		SW846 8260C			5/22/15 02:42	CJG	A
4-Bromofluorobenzene (S)	90.9		%	79 - 114		SW846 8260C			5/22/15 02:42	CJG	A
Dibromofluoromethane (S)	96.8		%	78 - 116		SW846 8260C			5/22/15 02:42	CJG	A
Toluene-d8 (S)	94.3		%	76 - 127		SW846 8260C			5/22/15 02:42	CJG	A
SEMIVOLATILES											
1,4-Dioxane	0.75		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 18:34	GEC	E1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81.4		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 18:34	GEC	E1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807003** Date Collected: 5/18/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-111B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/22/15 02:59	CJG	A
Benzene	7.9		ug/L	1.0	0.23	SW846 8260C		5/22/15 02:59	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:59	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:59	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 02:59	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 02:59	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/22/15 02:59	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 02:59	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:59	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/22/15 02:59	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 02:59	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:59	CJG	A
Chloroform	0.95J	J	ug/L	1.0	0.21	SW846 8260C		5/22/15 02:59	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:59	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:59	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 02:59	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:59	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 02:59	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 02:59	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 02:59	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 02:59	CJG	A
1,1-Dichloroethane	39.3		ug/L	1.0	0.28	SW846 8260C		5/22/15 02:59	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:59	CJG	A
1,1-Dichloroethene	463		ug/L	50.0	14.5	SW846 8260C		5/30/15 04:33	CJG	C
cis-1,2-Dichloroethene	28.4		ug/L	1.0	0.32	SW846 8260C		5/22/15 02:59	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:59	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 02:59	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 02:59	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 02:59	CJG	A
1,4-Dioxane	140J	J	ug/L	320	58.9	SW846 8260C		5/22/15 02:59	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 02:59	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 02:59	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 02:59	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 02:59	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 02:59	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 02:59	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807003** Date Collected: 5/18/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-111B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:59	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/22/15 02:59	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/22/15 02:59	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 02:59	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/22/15 02:59	CJG	A
Tetrachloroethene	4.8		ug/L	1.0	0.35	SW846 8260C			5/22/15 02:59	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/22/15 02:59	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/22/15 02:59	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/22/15 02:59	CJG	A
1,1,1-Trichloroethane	1.7		ug/L	1.0	0.22	SW846 8260C			5/22/15 02:59	CJG	A
1,1,2-Trichloroethane	2.4		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:59	CJG	A
Trichloroethene	1270		ug/L	50.0	16.5	SW846 8260C			5/30/15 04:33	CJG	C
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 02:59	CJG	A
Vinyl Chloride	1.2		ug/L	1.0	0.30	SW846 8260C			5/22/15 02:59	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 02:59	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/22/15 02:59	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.9		%	62 - 133		SW846 8260C			5/22/15 02:59	CJG	A
1,2-Dichloroethane-d4 (S)	85.8		%	62 - 133		SW846 8260C			5/30/15 04:33	CJG	C
4-Bromofluorobenzene (S)	103		%	79 - 114		SW846 8260C			5/30/15 04:33	CJG	C
4-Bromofluorobenzene (S)	86.9		%	79 - 114		SW846 8260C			5/22/15 02:59	CJG	A
Dibromofluoromethane (S)	93.2		%	78 - 116		SW846 8260C			5/22/15 02:59	CJG	A
Dibromofluoromethane (S)	87.9		%	78 - 116		SW846 8260C			5/30/15 04:33	CJG	C
Toluene-d8 (S)	89.8		%	76 - 127		SW846 8260C			5/30/15 04:33	CJG	C
Toluene-d8 (S)	94.8		%	76 - 127		SW846 8260C			5/22/15 02:59	CJG	A
SEMIVOLATILES											
1,4-Dioxane	182		ug/L	1.4	0.28	EPA 522	5/30/15	KMR	5/31/15 10:32	CGS	F1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	86.1		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 18:59	GEC	F1
1,4-Dioxane-d8 (S)	86.8		%	70 - 130		EPA 522	5/30/15	KMR	5/31/15 10:32	CGS	F1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Arsenic, Total	0.0038		mg/L	0.0030	0.0010	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Barium, Total	0.090		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Beryllium, Total	0.00046J	J	mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807003** Date Collected: 5/18/2015 10:35 Matrix: Water

Sample ID: **MRC-MW-111B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Cobalt, Total	0.063		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Iron, Total	40.1		mg/L	0.067	0.022	SW846 6010C	5/21/15	AAM	5/22/15 14:47	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Manganese, Total	1.2		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/1/15	MNP	6/1/15 13:29	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Nickel, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:02	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807004** Date Collected: 5/18/2015 14:25 Matrix: Water

Sample ID: **MRC-MW-109A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	8.0J	J	ug/L	10.0	3.1	SW846 8260C		5/28/15 22:05	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/28/15 22:05	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/28/15 22:05	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/28/15 22:05	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/28/15 22:05	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/28/15 22:05	TMP	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/28/15 22:05	TMP	A
Carbon Disulfide	0.35J	J	ug/L	1.0	0.23	SW846 8260C		5/28/15 22:05	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/28/15 22:05	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/28/15 22:05	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/28/15 22:05	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/28/15 22:05	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/28/15 22:05	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/28/15 22:05	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/28/15 22:05	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/28/15 22:05	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/28/15 22:05	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/28/15 22:05	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/28/15 22:05	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/28/15 22:05	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/28/15 22:05	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/28/15 22:05	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/28/15 22:05	TMP	A
1,1-Dichloroethene	1.7		ug/L	1.0	0.29	SW846 8260C		5/28/15 22:05	TMP	A
cis-1,2-Dichloroethene	45.4		ug/L	1.0	0.32	SW846 8260C		5/28/15 22:05	TMP	A
trans-1,2-Dichloroethene	1.2		ug/L	1.0	0.26	SW846 8260C		5/28/15 22:05	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/28/15 22:05	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/28/15 22:05	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/28/15 22:05	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/28/15 22:05	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/28/15 22:05	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/28/15 22:05	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/28/15 22:05	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/28/15 22:05	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/28/15 22:05	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/28/15 22:05	TMP	A

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807004** Date Collected: 5/18/2015 14:25 Matrix: Water

Sample ID: **MRC-MW-109A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/28/15 22:05	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/28/15 22:05	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/28/15 22:05	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/28/15 22:05	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/28/15 22:05	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/28/15 22:05	TMP	A
Toluene	0.40J	J	ug/L	1.0	0.23	SW846 8260C			5/28/15 22:05	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/28/15 22:05	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/28/15 22:05	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/28/15 22:05	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/28/15 22:05	TMP	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			5/28/15 22:05	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/28/15 22:05	TMP	A
Vinyl Chloride	34.0		ug/L	1.0	0.30	SW846 8260C			5/28/15 22:05	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/28/15 22:05	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/28/15 22:05	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	92.3		%	62 - 133	SW846 8260C			5/28/15 22:05	TMP	A
4-Bromofluorobenzene (S)	92.6		%	79 - 114	SW846 8260C			5/28/15 22:05	TMP	A
Dibromofluoromethane (S)	98.1		%	78 - 116	SW846 8260C			5/28/15 22:05	TMP	A
Toluene-d8 (S)	97.3		%	76 - 127	SW846 8260C			5/28/15 22:05	TMP	A

METALS

Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Arsenic, Total	0.0044		mg/L	0.0030	0.0010	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Barium, Total	0.19		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Beryllium, Total	0.00067J	J	mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Chromium, Total	0.012		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Cobalt, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Copper, Total	0.014		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Iron, Total	67.9		mg/L	0.067	0.022	SW846 6010C	5/21/15	AAM	5/22/15 14:51	SRT	D1
Lead, Total	0.0059		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Manganese, Total	1.4		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/1/15	MNP	6/1/15 13:30	MNP	D3
Molybdenum, Total	0.00079J	J	mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Nickel, Total	0.073		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807004** Date Collected: 5/18/2015 14:25 Matrix: Water

Sample ID: **MRC-MW-109A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
Vanadium, Total	0.026		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:09	MO	D2
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/26/15 13:12	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807005** Date Collected: 5/18/2015 13:55 Matrix: Water

Sample ID: **MRC-MW-90B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/22/15 03:33	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 03:33	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:33	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 03:33	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 03:33	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 03:33	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/22/15 03:33	CJG	A
Carbon Disulfide	0.65J	J	ug/L	1.0	0.23	SW846 8260C		5/22/15 03:33	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 03:33	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/22/15 03:33	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 03:33	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 03:33	CJG	A
Chloroform	0.70J	J	ug/L	1.0	0.21	SW846 8260C		5/22/15 03:33	CJG	A
Chloromethane	0.57J	J	ug/L	1.0	0.31	SW846 8260C		5/22/15 03:33	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:33	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 03:33	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 03:33	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 03:33	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 03:33	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 03:33	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 03:33	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 03:33	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:33	CJG	A
1,1-Dichloroethene	15.6		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:33	CJG	A
cis-1,2-Dichloroethene	2.9		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:33	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 03:33	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 03:33	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 03:33	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:33	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/22/15 03:33	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 03:33	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 03:33	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 03:33	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 03:33	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 03:33	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 03:33	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807005** Date Collected: 5/18/2015 13:55 Matrix: Water

Sample ID: **MRC-MW-90B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:33	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/22/15 03:33	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/22/15 03:33	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 03:33	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/22/15 03:33	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/22/15 03:33	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/22/15 03:33	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/22/15 03:33	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/22/15 03:33	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/22/15 03:33	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:33	CJG	A
Trichloroethene	102		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:33	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 03:33	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/22/15 03:33	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:33	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/22/15 03:33	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133		SW846 8260C			5/22/15 03:33	CJG	A
4-Bromofluorobenzene (S)	88.8		%	79 - 114		SW846 8260C			5/22/15 03:33	CJG	A
Dibromofluoromethane (S)	95.9		%	78 - 116		SW846 8260C			5/22/15 03:33	CJG	A
Toluene-d8 (S)	94.6		%	76 - 127		SW846 8260C			5/22/15 03:33	CJG	A
SEMIVOLATILES											
1,4-Dioxane	5.4		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 19:48	GEC	D1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	84.3		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 19:48	GEC	D1
SUBCONTRACTED ANALYSIS											
Subcontracted Analysis	See attached					Subcontract			5/26/15 13:31	SUB	F

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807006** Date Collected: 5/18/2015 13:36 Matrix: Water

Sample ID: **MRC-MW-98A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/22/15 03:50	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 03:50	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:50	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 03:50	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 03:50	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 03:50	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/22/15 03:50	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 03:50	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 03:50	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/22/15 03:50	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 03:50	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 03:50	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/22/15 03:50	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 03:50	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:50	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 03:50	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 03:50	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 03:50	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 03:50	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 03:50	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 03:50	CJG	A
1,1-Dichloroethane	3.8		ug/L	1.0	0.28	SW846 8260C		5/22/15 03:50	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:50	CJG	A
1,1-Dichloroethene	6.3		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:50	CJG	A
cis-1,2-Dichloroethene	1.2		ug/L	1.0	0.32	SW846 8260C		5/22/15 03:50	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 03:50	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 03:50	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 03:50	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 03:50	CJG	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/22/15 03:50	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 03:50	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 03:50	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 03:50	CJG	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/22/15 03:50	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 03:50	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 03:50	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807006** Date Collected: 5/18/2015 13:36 Matrix: Water

Sample ID: **MRC-MW-98A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:50	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/22/15 03:50	CJG	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/22/15 03:50	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 03:50	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/22/15 03:50	CJG	A
Tetrachloroethene	0.51J	J	ug/L	1.0	0.35	SW846 8260C			5/22/15 03:50	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/22/15 03:50	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/22/15 03:50	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/22/15 03:50	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/22/15 03:50	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:50	CJG	A
Trichloroethene	9.1		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:50	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 03:50	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/22/15 03:50	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 03:50	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/22/15 03:50	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133		SW846 8260C			5/22/15 03:50	CJG	A
4-Bromofluorobenzene (S)	89		%	79 - 114		SW846 8260C			5/22/15 03:50	CJG	A
Dibromofluoromethane (S)	98.1		%	78 - 116		SW846 8260C			5/22/15 03:50	CJG	A
Toluene-d8 (S)	95.1		%	76 - 127		SW846 8260C			5/22/15 03:50	CJG	A
SEMIVOLATILES											
1,4-Dioxane	3.8		ug/L	0.070	0.014	EPA 522	5/30/15	KMR	5/30/15 20:13	GEC	F1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	83.4		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 20:13	GEC	F1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Barium, Total	0.045		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Chromium, Total	0.0061		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Cobalt, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Iron, Total	0.33		mg/L	0.067	0.022	SW846 6010C	5/21/15	AAM	5/22/15 14:54	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807006** Date Collected: 5/18/2015 13:36 Matrix: Water

Sample ID: **MRC-MW-98A-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	0.028		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/1/15	MNP	6/1/15 13:33	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Nickel, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:13	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807007** Date Collected: 5/18/2015 15:40 Matrix: Water

Sample ID: **MRC-MW-98B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/22/15 04:07	CJG	A
Benzene	4.2		ug/L	1.0	0.23	SW846 8260C		5/22/15 04:07	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 04:07	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 04:07	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/22/15 04:07	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/22/15 04:07	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/22/15 04:07	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/22/15 04:07	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 04:07	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/22/15 04:07	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/22/15 04:07	CJG	A
Chloroethane	40.1		ug/L	1.0	0.33	SW846 8260C		5/22/15 04:07	CJG	A
Chloroform	0.99J	J	ug/L	1.0	0.21	SW846 8260C		5/22/15 04:07	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 04:07	CJG	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 04:07	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/22/15 04:07	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/22/15 04:07	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/22/15 04:07	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/22/15 04:07	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/22/15 04:07	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/22/15 04:07	CJG	A
1,1-Dichloroethane	137		ug/L	1.0	0.28	SW846 8260C		5/22/15 04:07	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/22/15 04:07	CJG	A
1,1-Dichloroethene	345		ug/L	20.0	5.8	SW846 8260C		5/30/15 04:56	CJG	C
cis-1,2-Dichloroethene	31.5		ug/L	1.0	0.32	SW846 8260C		5/22/15 04:07	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 04:07	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/22/15 04:07	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		5/22/15 04:07	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/22/15 04:07	CJG	A
1,4-Dioxane	121J	J	ug/L	320	58.9	SW846 8260C		5/22/15 04:07	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/22/15 04:07	CJG	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/22/15 04:07	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/22/15 04:07	CJG	A
Isopropylbenzene	0.46J	J	ug/L	1.0	0.22	SW846 8260C		5/22/15 04:07	CJG	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/22/15 04:07	CJG	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/22/15 04:07	CJG	A

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807007** Date Collected: 5/18/2015 15:40 Matrix: Water

Sample ID: **MRC-MW-98B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 04:07	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/22/15 04:07	CJG	A
Methylene Chloride	9.1		ug/L	1.0	0.45	SW846 8260C			5/22/15 04:07	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/22/15 04:07	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/22/15 04:07	CJG	A
Tetrachloroethene	6.1		ug/L	1.0	0.35	SW846 8260C			5/22/15 04:07	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/22/15 04:07	CJG	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/22/15 04:07	CJG	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/22/15 04:07	CJG	A
1,1,1-Trichloroethane	41.7		ug/L	1.0	0.22	SW846 8260C			5/22/15 04:07	CJG	A
1,1,2-Trichloroethane	1.8		ug/L	1.0	0.33	SW846 8260C			5/22/15 04:07	CJG	A
Trichloroethene	554		ug/L	20.0	6.6	SW846 8260C			5/30/15 04:56	CJG	C
Trichlorofluoromethane	0.45J	J	ug/L	1.0	0.24	SW846 8260C			5/22/15 04:07	CJG	A
Vinyl Chloride	1.6		ug/L	1.0	0.30	SW846 8260C			5/22/15 04:07	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			5/22/15 04:07	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/22/15 04:07	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	86.3		%	62 - 133		SW846 8260C			5/30/15 04:56	CJG	C
1,2-Dichloroethane-d4 (S)	99		%	62 - 133		SW846 8260C			5/22/15 04:07	CJG	A
4-Bromofluorobenzene (S)	100		%	79 - 114		SW846 8260C			5/30/15 04:56	CJG	C
4-Bromofluorobenzene (S)	89.1		%	79 - 114		SW846 8260C			5/22/15 04:07	CJG	A
Dibromofluoromethane (S)	94.3		%	78 - 116		SW846 8260C			5/22/15 04:07	CJG	A
Dibromofluoromethane (S)	89		%	78 - 116		SW846 8260C			5/30/15 04:56	CJG	C
Toluene-d8 (S)	89.3		%	76 - 127		SW846 8260C			5/30/15 04:56	CJG	C
Toluene-d8 (S)	94.3		%	76 - 127		SW846 8260C			5/22/15 04:07	CJG	A
SEMIVOLATILES											
1,4-Dioxane	138		ug/L	1.4	0.28	EPA 522	5/30/15	KMR	5/31/15 09:39	CGS	F1
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	78.9		%	70 - 130		EPA 522	5/30/15	KMR	5/30/15 20:39	GEC	F1
1,4-Dioxane-d8 (S)	86		%	70 - 130		EPA 522	5/30/15	KMR	5/31/15 09:39	CGS	F1
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Barium, Total	0.041		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Beryllium, Total	0.0084		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807007** Date Collected: 5/18/2015 15:40 Matrix: Water

Sample ID: **MRC-MW-98B-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Cobalt, Total	0.087		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Iron, Total	18.5		mg/L	0.067	0.022	SW846 6010C	5/21/15	AAM	5/22/15 14:58	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Manganese, Total	2.7		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/1/15	MNP	6/1/15 13:35	MNP	D3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Nickel, Total	0.13		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:17	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2071807 TMM035|112IC06247

Lab ID: **2071807008** Date Collected: 5/18/2015 00:00 Matrix: Water

Sample ID: **MRC-MW-DUP08-051815** Date Received: 5/19/2015 19:25

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Barium, Total	0.046		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Chromium, Total	0.0065		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Cobalt, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Iron, Total	0.34		mg/L	0.067	0.022	SW846 6010C	5/21/15	AAM	5/22/15 15:02	SRT	A1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Manganese, Total	0.037		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/1/15	MNP	6/1/15 13:36	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Nickel, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2
Vanadium, Total	0.00079J	J	mg/L	0.0022	0.00074	SW846 6020A	5/24/15	AAM	5/26/15 13:20	MO	A2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL REPORT

Workorder: 34-1514147
Client: ALS Environmental
Project Manage Kevin W. Griffiths

Analytical Results

Sample ID: **2071807004 (MRCMW109A051815)**
Sampling Site: NA
Collected: 05/18/2015
Received: 05/21/2015
Lab ID: 1514147001
Media: 250 mL Nalgene
Matrix: Water
Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water
Batch: ELMS/1567 (HBN: 149278)
Analyzed: 05/26/2015 13:12
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	MDL (ug/L)	RL (ug/L)	Dilution	Qual
Perchlorate	ND	0.060	0.20	1	U

Sample ID: **2071807005 (MRCMW90B051815)**
Sampling Site: NA
Collected: 05/18/2015
Received: 05/21/2015
Lab ID: 1514147002
Media: 250 mL Nalgene
Matrix: Water
Sampling Parameter: NA

Analysis Method - EPA 6850

Preparation: Not Applicable
Analysis: EPA 6850, Water
Batch: ELMS/1567 (HBN: 149278)
Analyzed: 05/26/2015 13:31
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	MDL (ug/L)	RL (ug/L)	Dilution	Qual
Perchlorate	**0.62**	0.060	0.20	1	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850	/S/ Thomas Bosch 05/27/2015 15:05	/S/ Thomas T. McKay 06/01/2015 14:06

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-035

Sample Management

This report contains the results of the analysis of eight (8) water samples collected on May 18, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on May 19, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Subcontracted Data

Two (2) samples were subcontracted to ALS – Salt Lake City for Perchlorate analysis by Method 6850. The data has been attached at the end of this data package.

Volatile Organics by SW-846 Method 8260

Sample Handling. Seven (7) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2181443, chlorobenzene was detected at 0.25J µg/L.
- In 2183121, bromomethane was detected at 0.43J µg/L; carbon disulfide was detected at 0.41J µg/L; 1,3-dichlorobenzene was detected at 0.25J µg/L; 1,4-dichlorobenzene was detected at 0.37J µg/L.
- In 2184389, 1,2,3-trichlorobenzene was detected at 1.2J µg/L; 1,2,4-trichlorobenzene was detected at 1.0J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2184390, bromoform was recovered below the control limits; 1,2-dibromoethane and methylene chloride were recovered above the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Five (5) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

Total Metals by SW-846 Method 6020A

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on a sample, 2071807008 in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Total Metals by SW-846 Method 6010C

Sample handling. Five (5) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. Five (5) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2071807008 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 6/24/2015

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1514147

Client: ALS Laboratories (Middletown, PA)
Matrix: Water
ELMS Batch (HBN): 1567 (149278)

General Set Information: There were five field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 448332) was less than 1/2 the CRDL. The recovery for the LCS (448333) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1513562001 (Client ID: 2070699 008). The percent recoveries and the relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 4.2, Table F-12. Manual Integrations were performed for all of the Initial Calibration analyses (datafiles: 14AUGP001-10) along with datafiles 26MAYP-02/03/11/13/16.

Thomas Bosch — June 1, 2015
Thomas Bosch — Date

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DJM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE __

207180 7

Project Name: MRC 2015 GW	Project Number: 112IC06247
Project Manager: Tony Apuzzage	Report CC:
Company/Address: Tetra Tech INC 20251 Century Blvd STE 200 Germantown MD 20874	
Phone #: 301 528-3021	Email:
Sampler's Signature: Walt Pr	Sampler's Printed Name: Walt Pryon

ANALYSIS REQUESTED (Include Method Number and Conta.

PRESERVATIVE: 1 | 2 | 7 | -

NUMBER OF CONTAINERS

GC/MS VOAs ○ 8260 ○ 624 ○ CLP | GC/MS SVOAs ○ 8270 ○ 625 | GC VOAs ○ 8021 ○ 601/602 | PESTICIDES ○ 8081 ○ 608 | PCBs ○ 8082 ○ 608 | METALS, TOTAL (List in comments below) | METALS, DISSOLVED (List in comments below) | 1,4 Dioxane | Perchlorate

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

REMARKS/ ALTERNATE DESCRIPTION

	CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	# CONTAINERS	GC/MS VOAs	GC/MS SVOAs	GC VOAs	PESTICIDES	PCBs	METALS, TOTAL	METALS, DISSOLVED	1,4 Dioxane	Perchlorate
01	TB-05/18-15		5-18-15	—	Aq	2	2X								
02	MRC-MW-111A-05181		↓	0926	↓	5	3X						2X		
03	MRC-MW-111B-051915			1035		6	3X					X	2X		
04	MRC-MW-109A-05180			1428		6	3X					X	2X	X	X
05	MRC-MW-90B-051485			1355		5	3X					X	2X	X	X
06	MRC-MW-90A-051815			1336		6	3X					X	2X		
07	MRC-MW-98B-051815			1540		5	3X					X	2X		
08	MRC-DUP08-051815		↓	0000	↓	1						X			

received

did not receive

	Y	N	Initials
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		LMG
COC/Lbls Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp: 1 °C

Cooler #:

Therm ID: 121

Ship Carrier:

FedEx UPS

DHL

Tracking #:

SPECIAL INSTRUCTIONS/COMMENTS
Metals All Samples go to Middletown, PA Lab

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day

REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data

Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Walt Pr	Signature: [illegible]	Signature: [illegible]	Signature: Sam Schmitt	Signature:	Signature:
Printed Name: Walt Pryon	Printed Name: [illegible]	Printed Name: [illegible]	Printed Name: Sam Schmitt	Printed Name:	Printed Name:
Firm: TT INC	Firm: ALS	Firm: ALS	Firm: ALS	Firm:	Firm:
Date/Time: 5-19-15	Date/Time: 5/19/15 1310	Date/Time: 5/19/15 1925	Date/Time: 5/19/15 1925	Date/Time:	Date/Time:

Distribution: White - Lab Copy; Yellow - Return to Originator

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LMG 05/20/15

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2071807 TMM035|112IC06247

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2071807001	TB-0518-15	Water	5/18/2015 00:00	5/19/2015 19:25	Collected by Client
2071807002	MRC-MW-111A-051815	Water	5/18/2015 09:26	5/19/2015 19:25	Collected by Client
2071807003	MRC-MW-111B-051815	Water	5/18/2015 10:35	5/19/2015 19:25	Collected by Client
2071807004	MRC-MW-109A-051815	Water	5/18/2015 14:25	5/19/2015 19:25	Collected by Client
2071807005	MRC-MW-90B-051815	Water	5/18/2015 13:55	5/19/2015 19:25	Collected by Client
2071807006	MRC-MW-98A-051815	Water	5/18/2015 13:36	5/19/2015 19:25	Collected by Client
2071807007	MRC-MW-98B-051815	Water	5/18/2015 15:40	5/19/2015 19:25	Collected by Client
2071807008	MRC-MW-DUP08-051815	Water	5/18/2015 00:00	5/19/2015 19:25	Collected by Client

Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 15051950.D BFB Injection Date: 5/19/2015

Instrument ID: ms15.i BFB Injection Time: 17:56

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	48.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	92.7
175	5.0 - 9.0% of mass 174	6.6 (7.1) 1
176	95.0 - 101.0% of mass 174	88.4 (95.3) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15051953.D	5/19/2015	18:52
1234	1234	15051954.D	5/19/2015	19:10
1235	1235	15051955.D	5/19/2015	19:27
1236	1236	15051956.D	5/19/2015	19:44
1237	1237	15051957.D	5/19/2015	20:01
1238	1238	15051958.D	5/19/2015	20:18
1239	1239	15051959.D	5/19/2015	20:35
2180034(LCS)	2180034	15051964.D	5/19/2015	22:01

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 15052150.D BFB Injection Date: 5/21/2015

Instrument ID: ms15.i BFB Injection Time: 19:16

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.6
75	30.0 - 60.0% of mass 95	46.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	79.2
175	5.0 - 9.0% of mass 174	5.9 (7.4) 1
176	95.0 - 101.0% of mass 174	75.4 (95.2) 1
177	5.0 - 9.0% of mass 176	5.0 (6.6) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15052152.D	5/21/2015	19:52
2181443(MB)	2181443	15052155.D	5/21/2015	20:59
2181444(LCS)	2181444	15052156.D	5/21/2015	21:16
TB-0518-15	2071807001	15052174.D	5/22/2015	02:24
MRC-MW-111A-051815	2071807002	15052175.D	5/22/2015	02:42
MRC-MW-111B-051815	2071807003	15052176.D	5/22/2015	02:59
MRC-MW-90B-051815	2071807005	15052178.D	5/22/2015	03:33
MRC-MW-98A-051815	2071807006	15052179.D	5/22/2015	03:50
MRC-MW-98B-051815	2071807007	15052180.D	5/22/2015	04:07

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 15052800.D BFB Injection Date: 5/28/2015

Instrument ID: ms15.i BFB Injection Time: 13:27

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.2
75	30.0 - 60.0% of mass 95	47.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.7(0.8) 1
174	50.0 - 100.0% of mass 95	89.5
175	5.0 - 9.0% of mass 174	6.5 (7.3) 1
176	95.0 - 101.0% of mass 174	85.6 (95.6) 1
177	5.0 - 9.0% of mass 176	5.2 (6.0) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15052803.D	5/28/2015	14:24
1234	1234	15052804.D	5/28/2015	14:41
1235	1235	15052805.D	5/28/2015	14:58
1236	1236	15052806.D	5/28/2015	15:15
1237	1237	15052807.D	5/28/2015	15:32
1238	1238	15052808.D	5/28/2015	15:49
1239	1239	15052809.D	5/28/2015	16:06
2183121(MB)	2183121	15052813A.D	5/28/2015	17:14
2183122(LCS)	2183122	15052814A.D	5/28/2015	17:31
MRC-MW-109A-051815	2071807004	15052830.D	5/28/2015	22:05

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 17052850.D BFB Injection Date: 5/28/2015

Instrument ID: ms17.i BFB Injection Time: 23:04

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.0
75	30.0 - 60.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.0(0.0) 1
174	50.0 - 100.0% of mass 95	72.4
175	5.0 - 9.0% of mass 174	4.8 (6.7) 1
176	95.0 - 101.0% of mass 174	68.8 (95.1) 1
177	5.0 - 9.0% of mass 176	4.7 (6.8) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD001	VSTD001	17052854.D	5/29/2015	00:38
VSTD005	VSTD005	17052855.D	5/29/2015	01:00
VSTD020	VSTD020	17052856.D	5/29/2015	01:23
VSTD050	VSTD050	17052857.D	5/29/2015	01:46
VSTD100	VSTD100	17052858.D	5/29/2015	02:08
VSTD200	VSTD200	17052859.D	5/29/2015	02:31
2183888(LCS)	2183888	17052863.D	5/29/2015	04:02

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 17052950.D BFB Injection Date: 5/29/2015

Instrument ID: ms17.i BFB Injection Time: 23:41

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.8
75	30.0 - 60.0% of mass 95	44.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.4(0.5) 1
174	50.0 - 100.0% of mass 95	85.0
175	5.0 - 9.0% of mass 174	5.9 (6.9) 1
176	95.0 - 101.0% of mass 174	84.2 (99.0) 1
177	5.0 - 9.0% of mass 176	5.4 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	17052951.D	5/30/2015	00:01
2184389(MB)	2184389	17052953A.D	5/30/2015	00:48
2184390(LCS)	2184390	17052954A.D	5/30/2015	01:11
MRC-MW-111B-051815-DL50	2071807003	17052963.D	5/30/2015	04:33
MRC-MW-98B-051815-DL20	2071807007	17052964.D	5/30/2015	04:56

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	3115	12365	49853	134143	276003	L
Acrolein	0.02972	0.02957	0.02954	0.03038	0.03047	A
Acrylonitrile	0.08488	0.07199	0.07861	0.08049	0.07933	A
Acetonitrile	4425	17844	69326	188478	300736	Q
tert-Amyl Ethylether	9358	51721	251711	711597	1608239	L
tert-Amyl methyl ether	0.51419	0.50109	0.59173	0.61758	0.65041	A
tert-Amyl Alcohol	1545	9368	37420	112845	250393	L
Benzene	1.27694	1.26732	1.28484	1.24368	1.22049	A
Benzyl Chloride	834	6192	33005	118018	312515	Q
Bromobenzene	0.84079	0.89661	0.98859	0.97450	0.97760	A
Bromochloromethane	0.22690	0.20281	0.19716	0.19395	0.18988	A
Bromodichloromethane	0.39608	0.38566	0.41380	0.43297	0.44872	A
Bromoform *	0.44206	0.36305	0.40163	0.44578	0.48867	A
Bromomethane	9332	38368	134592	299912	612357	L
2-Butanone	0.03548	0.03196	0.03110	0.03238	0.03596	A
tert.- Butyl Alcohol	0.01799	0.01738	0.01766	0.01849	0.01911	A
tert-Butylbenzene	4210	35724	204082	583061	1226871	L
n-Butylbenzene	4251	32375	204916	604515	1292790	L
sec-Butylbenzene	21334	179122	1024862	2860265	6050064	L
Carbon Disulfide	0.56794	0.50611	0.52190	0.57244	0.60701	A
Carbon Tetrachloride	0.48107	0.46186	0.48045	0.49463	0.48833	A
Chloroacetonitrile	690	3291	19445	55845	120463	L
Chlorobenzene *	2.63237	2.44519	2.41629	2.36315	2.35133	A
1-Chlorobutane	0.24916	0.25336	0.25827	0.25773	0.25037	A
Chlorodibromomethane	0.72274	0.69932	0.75810	0.83913	0.89607	A
Chloroethane	0.23312	0.19132	0.16812	0.16680	0.16982	A
2-Chloroethylvinyl ether		194	1147	4150	11064	L
Chloroform **	34082	120948	452230	1131734	2282175	L
1-Chlorohexane	7140	42958	231416	685474	1494181	L
Chloromethane *	0.42756	0.36516	0.34107	0.32891	0.32587	A
Chloroprene	0.39427	0.37519	0.40739	0.42355	0.42113	A
3-Chloro-1-propene	7451	30544	131378	347064	731586	L
o-Chlorotoluene	1.96066	2.19002	2.58690	2.64845	2.72309	A
p-Chlorotoluene	1.80202	1.96606	2.39720	2.46143	2.52331	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.39402	0.39397	0.44707	0.45794	0.44351	A
1,2-Dibromo-3-Chloropropane	0.12788	0.08870	0.09907	0.11046	0.12063	A
1,2-Dibromoethane	0.66563	0.64093	0.64736	0.67777	0.70891	A
Dibromomethane	0.23730	0.20183	0.20358	0.20070	0.20138	A
trans-1,4-Dichloro-2-butene	1285	7217	43883	129597	282167	L
1,2-Dichlorobenzene	1.70345	1.61897	1.73793	1.73861	1.76151	A
1,3-Dichlorobenzene	1.75375	1.77202	1.86616	1.81477	1.83107	A
1,4-Dichlorobenzene	1.99683	1.87531	1.90039	1.84388	1.84730	A
Dichlorodifluoromethane	0.64565	0.58608	0.54864	0.53746	0.51846	A
1,1-Dichloroethane *	0.61713	0.52204	0.53544	0.52066	0.51047	A
1,2-Dichloroethene, Total	22475	114510	468065	1225791	2559299	L
1,2-Dichloroethane	0.52285	0.46098	0.45963	0.44240	0.43717	A
1,1-Dichloroethene **	0.42133	0.35430	0.34750	0.34640	0.34301	A
cis-1,2-Dichloroethene	0.41312	0.38834	0.38995	0.39209	0.39475	A
trans-1,2-Dichloroethene	0.36877	0.33961	0.32180	0.31488	0.31358	A
Dichlorofluoromethane	0.57486	0.52133	0.48741	0.48687	0.48296	A
1,1-Dichloro-2-Propanone	353	3518	17184	51582	110723	L
2,2-Dichloropropane	0.40606	0.37876	0.38145	0.39192	0.40443	A
1,3-Dichloropropane	1.17048	1.08399	1.09515	1.11269	1.14500	A
1,2-Dichloropropane **	0.28120	0.26864	0.27794	0.27934	0.27981	A
1,1-Dichloropropene	0.39190	0.41076	0.43693	0.44204	0.43620	A
cis-1,3-Dichloropropene	9239	49640	252858	761321	1735847	Q
trans-1,3-Dichloropropene	7210	45092	247474	714181	1582448	L
1,3-Dichloropropene, Total	16449	94732	500332	1475502	3318295	L
Diisobutylene	36774	101793	373036	970158	2018678	L
Diisopropyl ether	0.72247	0.60878	0.63018	0.65152	0.66260	A
1,4-Dioxane	1783	9356	48744	146938	318038	L
Ethyl Acetate	0.19534	0.17045	0.18467	0.19081	0.19355	A
Ethyl ether	0.15565	0.13953	0.13942	0.14466	0.14833	A
Ethyl Methacrylate	5813	36086	202648	620998	1361074	L
Ethyl tert-butyl ether	0.66750	0.63733	0.66933	0.69588	0.72425	A
Ethylbenzene **	0.96455	1.10340	1.19698	1.21734	1.21229	A
Freon 113	0.27967	0.27761	0.26271	0.25516	0.24774	A
Heptane	3131	22409	114774	328083	697579	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.50552	0.49797	0.52502	0.53916	0.55995	A
Hexachloroethane	0.42339	0.39473	0.46635	0.51053	0.55168	A
Hexane	0.36936	0.33531	0.33149	0.33576	0.33848	A
2-Hexanone	12603	72834	411611	1207505	2501925	L
Iodomethane	1499	8057	62527	248183	586024	L
Isobutyl alcohol	2681	13208	77882	226490	483970	L
Isopropyl Alcohol	2560	8009	28472	84066	180476	L
Isopropylbenzene	24097	163674	940868	2729302	5870170	L
p-Isopropyltoluene	4573	37518	233101	682067	1449054	L
Methyl acetate	1266	6346	23518	65043	133312	L
Methyl acrylate	0.17186	0.18016	0.20137	0.21049	0.21701	A
Methacrylonitrile	3257	17132	77797	193734	414159	L
Methyl cyclohexane	0.99997	0.95124	1.07710	1.12481	1.10934	A
Methyl methacrylate	3682	17866	92060	279510	645683	L
Methyl t-Butyl Ether	0.73966	0.62343	0.60801	0.62341	0.64108	A
4-Methyl-2-Pentanone(MIBK)	0.33818	0.35562	0.42467	0.46078	0.45541	A
Methylene Chloride	15408	51231	187554	461123	950532	Q
Naphthalene	10062	58023	359528	1492388	3559426	Q
Nitrobenzene	2413	10052	48164	179911	531680	Q
2-Nitropropane	5832	27005	151017	486216	1081589	L
Octane	2424	14873	97745	285730	622364	L
Pentachloroethane	0.67422	0.58192	0.60263	0.61088	0.62574	A
Pentane	0.16375	0.14555	0.13161	0.12932	0.12887	A
n-Propanol	0.02151	0.01843	0.01833	0.01786	0.01728	A
Propionitrile	0.04100	0.03073	0.03237	0.03205	0.03099	A
n-Propylbenzene	6248	48257	281351	780924	1631648	L
Styrene	14324	101739	639631	1775739	3812796	L
1,1,1,2-Tetrachloroethane	0.89983	0.83502	0.84340	0.86031	0.88491	A
1,1,2,2-Tetrachloroethane *	0.89525	0.76352	0.75516	0.73621	0.73273	A
Tetrachloroethene	1.00831	0.94954	0.88261	0.82744	0.80475	A
Tetrahydrofuran	0.04942	0.04534	0.05120	0.05530	0.05439	A
Toluene **	1.62322	1.65959	1.90250	1.93951	1.94551	A
Total Xylenes	1.04318	1.15782	1.36349	1.46927	1.49842	A
1,2,3-Trichlorobenzene	7550	39360	249431	786071	1696605	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	8497	47878	266939	877655	2015776	Q
1,1,1-Trichloroethane	0.53276	0.52165	0.53572	0.54452	0.54066	A
1,1,2-Trichloroethane	0.66730	0.59094	0.55589	0.56002	0.54956	A
Trichloroethene	0.41302	0.36320	0.37141	0.35510	0.34478	A
Trichlorofluoromethane	0.76477	0.66376	0.64217	0.62206	0.60276	A
1,2,3-Trichloropropane	0.31186	0.28037	0.27851	0.26730	0.26207	A
1,2,4-Trimethylbenzene	18426	148574	882857	2445783	5240284	L
1,3,5-Trimethylbenzene	17038	146325	873939	2396302	5003116	L
Vinyl Acetate	0.05831	0.05205	0.05968	0.06404	0.06629	A
Vinyl Chloride **	0.30764	0.27842	0.27940	0.28800	0.29627	A
o-Xylene	10610	64845	352052	1041764	2292334	Q
mp-Xylene	1.07289	1.23784	1.42785	1.49798	1.50155	A
4-Bromofluorobenzene	11470	54248	250942	718955	1543783	L
Dibromofluoromethane	15431	60804	239097	618744	1257772	L
1,2-Dichloroethane-d4	19902	73503	257832	646948	1300148	L
Toluene-d8		155131	738419	1992340	4189344	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	588226			L	0.000000	63.630810		0.99960
Acrolein	0.03235	0.03366		A		0.030810		5.15925
Acrylonitrile	0.08190	0.08625		A		0.080490		5.81705
Acetonitrile	806781			Q	0.000000	0.015840	0.000170	0.99301
tert-Amyl Ethylether	3745020	5364		L	0.000000	2.050170		0.99401
tert-Amyl methyl ether	0.71213	0.50937		A		0.585210		13.83360
tert-Amyl Alcohol	598109	677		L	0.000000	64.506287		0.99230
Benzene	1.24626	1.45399		A		1.284790		6.05459
Benzyl Chloride				Q	0.000000	0.101190	0.025850	0.99981
Bromobenzene	0.98820	1.08785		A		0.964880		8.08784
Bromochloromethane	0.17759	0.24372		A		0.204570		11.19128
Bromodichloromethane	0.47525	0.35865		A		0.415870		9.55819
Bromoform *	0.53976	0.49603		A		0.453860		13.20382
Bromomethane	1350144			L	0.000000	5.577270		0.99819
2-Butanone	0.03315			A		0.033340		5.89231
tert.- Butyl Alcohol	0.02067			A		0.018550		6.52528
tert-Butylbenzene	2605843	2355		L	0.000000	1.351060		0.99977
n-Butylbenzene	2743613			L	0.000000	1.284400		0.99951
sec-Butylbenzene	12284888	10498		L	0.000000	0.283470		0.99965
Carbon Disulfide	0.65830	0.62657		A		0.580040		9.46046
Carbon Tetrachloride	0.50626	0.47001		A		0.483230		3.08130
Chloroacetonitrile	278576			L	0.000000	59.085529		0.99581
Chlorobenzene *	2.38884	2.99831		A		2.513640		9.29778
1-Chlorobutane	0.25255	0.32347		A		0.263560		10.10734
Chlorodibromomethane	0.95186	0.66969		A		0.790990		13.46837
Chloroethane	0.16347			A		0.182110		14.76712
2-Chloroethylvinyl ether	50806			L	0.749740	143		0.92638
Chloroform **	4662274	24493		L	0.000000	1.586400		0.99970
1-Chlorohexane	3290797	3247		L	0.000000	0.989980		0.99825
Chloromethane *	0.33724			A		0.354300		10.86143
Chloroprene	0.43544	0.48668		A		0.420520		8.42169
3-Chloro-1-propene	1478765	4279		L	0.000000	5.003750		0.99993
o-Chlorotoluene	2.74137	2.21018		A		2.437240		12.76798
p-Chlorotoluene	2.59094	2.08496		A		2.260850		13.57354
Cyclohexane	0.44042	0.42297		A		0.428560		6.01751
1,2-Dibromo-3-Chloropropane	0.13270	0.10828		A		0.112530		13.95394

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.73686	0.76998		A		0.692490		6.94497
Dibromomethane	0.21005	0.22589		A		0.211530		6.82275
trans-1,4-Dichloro-2-butene	639471	785		L	0.000000	5.601070		0.99738
1,2-Dichlorobenzene	1.79830	1.73935		A		1.728300		3.24700
1,3-Dichlorobenzene	1.85824	1.93292		A		1.832700		3.30825
1,4-Dichlorobenzene	1.84529	2.20493		A		1.930560		6.86371
Dichlorodifluoromethane	0.52613			A		0.560400		8.56753
1,1-Dichloroethane *		0.64618		A		0.558650		10.35265
1,2-Dichloroethene, Total	5479946	12653		L	0.000000	2.736730		0.99950
1,2-Dichloroethane	0.44077	0.49703		A		0.465830		6.94750
1,1-Dichloroethene **	0.35410	0.45973		A		0.375200		12.30473
cis-1,2-Dichloroethene	0.41278	0.42900		A		0.402860		3.85402
trans-1,2-Dichloroethene	0.32532	0.43867		A		0.346090		13.01861
Dichlorofluoromethane	0.50007	0.64268		A		0.528030		11.34755
1,1-Dichloro-2-Propanone	246176			L	0.000000	66.266380		0.99788
2,2-Dichloropropane	0.43097	0.46178		A		0.407910		7.25525
1,3-Dichloropropane	1.18329	1.18051		A		1.138730		3.64770
1,2-Dichloropropane **	0.29435	0.29549		A		0.282400		3.36185
1,1-Dichloropropene	0.44353	0.46809		A		0.432780		5.68599
cis-1,3-Dichloropropene	3902762	4845		Q	0.000000	1.000530	0.032870	0.99977
trans-1,3-Dichloropropene	3557487	3573		L	0.000000	0.920690		0.99721
1,3-Dichloropropene, Total	7460249	8418		L	0.000000	0.878820		0.99685
Diisobutylene	4231985	31147		L	0.000000	1.762380		0.99976
Diisopropyl ether	0.69067	0.76489		A		0.675870		8.02977
1,4-Dioxane	700477			L	0.000000	270		0.99753
Ethyl Acetate	0.20402	0.22733		A		0.195170		9.00974
Ethyl ether	0.15639	0.16629		A		0.150040		6.61628
Ethyl Methacrylate	3038972	2926		L	0.000000	1.075940		0.99745
Ethyl tert-butyl ether	0.76383	0.69316		A		0.693040		5.98172
Ethylbenzene **	1.22808	1.09998		A		1.146090		8.40516
Freon 113	0.24985	0.31887		A		0.270230		9.20786
Heptane	1458099	1200		L	0.000000	5.122110		0.99965
Hexachlorobutadiene	0.56546	0.65311		A		0.549460		9.51369
Hexachloroethane	0.58476	0.47466		A		0.486590		13.89578
Hexane	0.35532	0.33266		A		0.342620		4.15699
2-Hexanone	5485111	5540		L	0.000000	2.958700		0.99900

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1232633	810		L	0.000000	6.111500		0.99621
Isobutyl alcohol	1073380	2655		L	0.000000	70.581429		0.99774
Isopropyl Alcohol	402404			L	0.000000	94.261971		0.99720
Isopropylbenzene	12022709	13011		L	0.000000	0.290620		0.99966
p-Isopropyltoluene	3079857	2116		L	0.000000	1.144120		0.99962
Methyl acetate	281666	839		L	0.000000	26.521111		0.99977
Methyl acrylate	0.22777	0.20298		A		0.201660		9.80851
Methacrylonitrile	843127	1240		L	0.000000	8.794770		0.99989
Methyl cyclohexane	1.11775	0.81190		A		1.027440		11.22680
Methyl methacrylate	1435644	2004		L	0.000000	5.301240		0.99603
Methyl t-Butyl Ether	0.68991	0.81508		A		0.677230		11.26983
4-Methyl-2-Pentanone(MIBK)	0.46641	0.33182		A		0.404700		14.98581
Methylene Chloride	2023691	11567		Q	0.012800	0.251340	0.002870	0.99995
Naphthalene	8223079	5682		Q	0.000000	1.766300	0.087990	0.99898
Nitrobenzene	1631893	1449		Q	0.000000	0.015790	0.000460	0.99986
2-Nitropropane		2725		L	0.000000	7.253240		0.99573
Octane	1314597	694		L	0.000000	2.453770		0.99930
Pentachloroethane	0.66003	0.79144		A		0.649550		10.82930
Pentane	0.13226			A		0.138560		9.95122
n-Propanol	0.01684			A		0.018380		8.99559
Propionitrile	0.03225	0.03618		A		0.033650		10.99128
n-Propylbenzene	3449417	3178		L	0.000000	1.018900		0.99988
Styrene	8259279	7788		L	0.000000	0.428660		0.99934
1,1,1,2-Tetrachloroethane	0.92388	0.95758		A		0.886420		5.00815
1,1,2,2-Tetrachloroethane *	0.73899	0.94126		A		0.794730		10.83499
Tetrachloroethene	0.79875	1.13841		A		0.915690		13.68329
Tetrahydrofuran	0.05417			A		0.051640		7.35669
Toluene **	1.99234	1.87033		A		1.847570		7.91188
Total Xylenes	1.52811	1.17148		A		1.318820		14.66068
1,2,3-Trichlorobenzene	3728950	3363		Q	0.000000	0.945970	0.017820	0.99978
1,2,4-Trichlorobenzene	4486355	4585		Q	0.000000	1.072580	0.031500	0.99953
1,1,1-Trichloroethane	0.55389	0.67258		A		0.557400		9.28761
1,1,2-Trichloroethane	0.56540	0.58458		A		0.581950		6.96413
Trichloroethene	0.35167	0.43847		A		0.376810		9.35578
Trichlorofluoromethane	0.61275			A		0.651380		9.16288
1,2,3-Trichloropropane	0.26593	0.38029		A		0.292330		14.44028

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	11059386	10614		L	0.000000	0.318090		0.99977
1,3,5-Trimethylbenzene	10550634	9402		L	0.000000	0.332880		0.99990
Vinyl Acetate	0.06798	0.05767		A		0.060860		9.14644
Vinyl Chloride **	0.31640			A		0.294360		5.22809
o-Xylene	4941923	5433		Q	0.000000	1.395210	0.022360	0.99979
mp-Xylene	1.52119	1.26003		A		1.359910		12.63029
4-Bromofluorobenzene		7412		L	0.000000	1.092370		0.99922
Dibromofluoromethane				L	0.000000	2.854140		0.99964
1,2-Dichloroethane-d4	2701740			L	0.000000	2.748500		0.99972
Toluene-d8	8957805			L	0.053370	0.356160		0.99988

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	4025	16946	64161	175733	350320	L
Acrolein	0.03330	0.02887	0.02782	0.02873	0.02840	A
Acrylonitrile	0.09544	0.08634	0.08961	0.09013	0.08811	A
Acetonitrile	0.02966	0.02813	0.02732	0.02685	0.02638	A
tert-Amyl Ethylether	0.37734	0.37553	0.44191	0.48454	0.51303	A
tert-Amyl methyl ether	0.52944	0.54435	0.65660	0.67724	0.69677	A
tert-Amyl Alcohol	0.01458	0.01316	0.01373	0.01541	0.01560	A
Benzene	1.22990	1.16777	1.21804	1.18574	1.16323	A
Benzyl Chloride	1636	7697	46186	170984	438439	Q
Bromobenzene	0.88959	0.88574	0.98265	0.99707	0.98957	A
Bromochloromethane	0.17380	0.17580	0.17277	0.16735	0.16513	A
Bromodichloromethane	0.39925	0.38091	0.39474	0.40857	0.41805	A
Bromoform *	0.47238	0.37937	0.40992	0.44293	0.47872	A
Bromomethane	9500	39708	148100	339968	678234	L
2-Butanone	0.02818	0.02830	0.03441	0.03460	0.03380	A
tert.- Butyl Alcohol	5043	19015	78798	221373	445743	L
tert-Butylbenzene	4504	33425	203807	680156	1420902	L
n-Butylbenzene	4668	26076	180148	690164	1455631	L
sec-Butylbenzene	20962	152283	963654	3351655	6943477	L
Carbon Disulfide	19871	88115	385730	1057274	2307738	L
Carbon Tetrachloride	0.35774	0.37359	0.38266	0.40294	0.39001	A
Chloroacetonitrile	0.01550	0.01378	0.01681	0.01905	0.01854	A
Chlorobenzene *	32453	167765	772960	2092103	4288060	Q
1-Chlorobutane	8778	45597	213618	575521	1141702	L
Chlorodibromomethane	0.74304	0.67200	0.72818	0.79091	0.84168	A
Chloroethane	0.19436	0.18787	0.16421	0.16248	0.15977	A
2-Chloroethylvinyl ether		233	2322	5549	12688	L
Chloroform **	39928	129706	513989	1313567	2622476	L
1-Chlorohexane	7744	39419	226789	825351	1739234	L
Chloromethane *	0.47108	0.40009	0.36654	0.35591	0.34334	A
Chloroprene	13358	64565	299295	860799	1827347	L
3-Chloro-1-propene	9275	43112	174183	451891	927047	L
o-Chlorotoluene	22535	145705	865761	2591914	5391229	L
p-Chlorotoluene	1.79390	1.93005	2.44021	2.58275	2.62247	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.29432	0.27504	0.30085	0.36558	0.34081	A
1,2-Dibromo-3-Chloropropane	1301	7829	36282	109564	237002	L
1,2-Dibromoethane	0.67844	0.62990	0.63496	0.66322	0.69138	A
Dibromomethane	0.20569	0.19111	0.18821	0.18469	0.18559	A
trans-1,4-Dichloro-2-butene	0.14977	0.15306	0.16529	0.17436	0.18704	A
1,2-Dichlorobenzene	19173	109360	569105	1619215	3422822	L
1,3-Dichlorobenzene	19900	116356	600641	1699835	3538457	L
1,4-Dichlorobenzene	23110	126058	618319	1729661	3609230	L
Dichlorodifluoromethane	0.56844	0.50593	0.44264	0.44241	0.41508	A
1,1-Dichloroethane *	21031	100849	440780	1138001	2336827	L
1,2-Dichloroethene, Total	27385	127315	546020	1457809	3048920	L
1,2-Dichloroethane	18094	81403	348809	905360	1826373	L
1,1-Dichloroethene **	11973	54685	233096	615547	1262752	L
cis-1,2-Dichloroethene	0.40395	0.37180	0.37307	0.37291	0.37663	A
trans-1,2-Dichloroethene	12768	57251	236157	622955	1285017	L
Dichlorofluoromethane	16914	85443	350993	905377	1874302	L
1,1-Dichloro-2-Propanone	0.01089	0.01310	0.01247	0.01431	0.01412	A
2,2-Dichloropropane	15685	67821	306318	834160	1747627	L
1,3-Dichloropropane	1.19383	1.09704	1.11478	1.16025	1.18201	A
1,2-Dichloropropane **	10893	53404	243089	648293	1358527	L
1,1-Dichloropropene	0.36391	0.34838	0.37286	0.39102	0.37948	A
cis-1,3-Dichloropropene	11417	59900	325792	992167	2197038	Q
trans-1,3-Dichloropropene	0.74052	0.80036	0.93806	1.00885	1.06724	A
1,3-Dichloropropene, Total	21104	118514	645428	1906784	4209748	L
Diisobutylene	46183	97152	332188	1148502	2268177	L
Diisopropyl ether	0.81954	0.73197	0.74519	0.75091	0.78834	A
1,4-Dioxane	0.00282	0.00239	0.00292	0.00331	0.00332	A
Ethyl Acetate	0.22714	0.20026	0.20864	0.21837	0.21606	A
Ethyl ether	0.15026	0.13361	0.13561	0.13140	0.13717	A
Ethyl Methacrylate	7390	42501	252637	799500	1766100	L
Ethyl tert-butyl ether	0.73279	0.67770	0.74190	0.76825	0.78329	A
Ethylbenzene **	11528	70028	373059	1069781	2193968	L
Freon 113	7622	35716	147101	413568	815292	L
Heptane	3265	14806	73484	313483	642915	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	5973	26480	117444	424601	885290	L
Hexachloroethane	5362	29527	148463	494839	1073691	L
Hexane	0.33011	0.25948	0.25276	0.29193	0.28687	A
2-Hexanone	17361	94220	575930	1730797	3549803	L
Iodomethane	2233	10061	58724	223848	533777	L
Isobutyl alcohol	5837	24252	85818	337597	714481	Q
Isopropyl Alcohol	3061	10867	41224	117618	236921	L
Isopropylbenzene	24701	150996	966944	3181941	6783884	L
p-Isopropyltoluene	5115	32620	216464	784790	1657366	L
Methyl acetate	1887	7638	30832	80300	163299	L
Methyl acrylate	0.19798	0.18280	0.20924	0.22337	0.22720	A
Methacrylonitrile	3583	17997	94355	252682	518102	L
Methyl cyclohexane	9379	47522	236852	866899	1722266	L
Methyl methacrylate	5241	23556	125435	399561	900992	L
Methyl t-Butyl Ether	27205	118871	511693	1370084	2934240	L
4-Methyl-2-Pentanone(MIBK)	0.39678	0.40887	0.51211	0.54275	0.53386	A
Methylene Chloride	24900	62349	205670	524099	1092225	Q
Naphthalene	11479	58757	364476	1625746	3894345	Q
Nitrobenzene	3030	13282	63503	236714	667642	Q
2-Nitropropane	0.11534	0.10101	0.12100	0.13892	0.14220	A
Octane	2223	11688	59931	274724	579809	Q
Pentachloroethane	8053	42790	211135	596263	1258733	L
Pentane	0.12063	0.09766	0.09050	0.10183	0.09452	A
n-Propanol	0.01968	0.01923	0.01915	0.01801	0.01708	A
Propionitrile	0.04011	0.03198	0.03488	0.03545	0.03396	A
n-Propylbenzene	6719	42659	296670	936807	1927346	L
Styrene	16828	106919	721666	2158066	4612919	L
1,1,1,2-Tetrachloroethane	10839	58668	273594	744652	1589552	L
1,1,2,2-Tetrachloroethane *	11909	59854	278583	752462	1540386	L
Tetrachloroethene	11918	55032	248649	670065	1313370	L
Tetrahydrofuran	0.05628	0.05450	0.06006	0.06355	0.06149	A
Toluene **	1.51589	1.50681	1.82845	1.90255	1.89094	A
Total Xylenes	35867	221532	1281124	3861203	8086176	L
1,2,3-Trichlorobenzene	7007	39671	234448	866072	1819289	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	9281	47406	256237	961801	2183479	L
1,1,1-Trichloroethane	17024	82211	378862	1020499	2079049	L
1,1,2-Trichloroethane	9918	45139	195246	519209	1068359	L
Trichloroethene	13393	59279	262259	708032	1431421	L
Trichlorofluoromethane	0.68415	0.59015	0.52545	0.51681	0.48159	A
1,2,3-Trichloropropane	3913	20781	94102	255879	518173	L
1,2,4-Trimethylbenzene	18320	131445	930119	2883762	6026571	L
1,3,5-Trimethylbenzene	17187	129702	912388	2791328	5778165	L
Vinyl Acetate	0.05745	0.05479	0.06123	0.06389	0.06594	A
Vinyl Chloride **	0.33077	0.29382	0.27206	0.28974	0.28996	A
o-Xylene	11199	63681	372028	1221642	2636685	L
mp-Xylene	24668	157851	909096	2639561	5449491	L
4-Bromofluorobenzene	10534	55990	273741	826356	1769701	L
Dibromofluoromethane	0.33251	0.33324	0.32756	0.32472	0.31316	A
1,2-Dichloroethane-d4	0.43363	0.37053	0.35765	0.34625	0.32956	A
Toluene-d8	2.33461	2.24775	2.48825	2.69693	2.71476	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	802467			L	0.000000	63.076981		0.99860
Acrolein	0.03059	0.03635		A		0.030580		10.28621
Acrylonitrile	0.08960	0.11659		A		0.093690		11.18519
Acetonitrile	0.02723			A		0.027590		4.22199
tert-Amyl Ethylether	0.55750	0.44163		A		0.455930		14.83253
tert-Amyl methyl ether	0.74202	0.63869		A		0.640730		12.19994
tert-Amyl Alcohol	0.01776	0.01330		A		0.014790		11.00398
Benzene	1.16688	1.59512		A		1.246670		12.50340
Benzyl Chloride	1177296			Q	0.000000	0.165590	0.015970	0.99955
Bromobenzene	0.98980	1.25324		A		0.998230		12.26084
Bromochloromethane	0.15701	0.23104		A		0.177560		13.75958
Bromodichloromethane	0.43502	0.46677		A		0.414760		6.92686
Bromoform *	0.51941	0.58118		A		0.469130		14.41362
Bromomethane	1541784			L	0.000000	6.544470		0.99835
2-Butanone	0.03522			A		0.032420		10.08747
tert.- Butyl Alcohol	1046061			L	0.000000	48.697021		0.99744
tert-Butylbenzene	3372539	3364		L	0.000000	1.307340		0.99829
n-Butylbenzene	3654725			L	0.000000	1.223420		0.99407
sec-Butylbenzene	14222178	14565		L	0.000000	0.298960		0.99743
Carbon Disulfide	5509359	14226		L	0.000000	1.863690		0.99575
Carbon Tetrachloride	0.41606	0.45296		A		0.396570		7.88858
Chloroacetonitrile	0.02028			A		0.017330		13.98612
Chlorobenzene *	9513519	21292		Q	0.000000	2.234190	0.017460	0.99996
1-Chlorobutane	2542605	6761		L	0.000000	3.954020		0.99950
Chlorodibromomethane	0.90091	0.84154		A		0.788320		10.03680
Chloroethane	0.15645			A		0.170860		9.38909
2-Chloroethylvinyl ether	44012			L	0.495450	224		0.96145
Chloroform **	5599618	32036		L	0.000000	1.776830		0.99961
1-Chlorohexane	4328172	4320		L	0.000000	0.969630		0.99258
Chloromethane *	0.35899			A		0.382660		12.36994
Chloroprene	4060444	9545		L	0.000000	2.484990		0.99927
3-Chloro-1-propene	2051724	6061		L	0.000000	4.899990		0.99961
o-Chlorotoluene	12422469	15608		L	0.000000	0.352120		0.99954
p-Chlorotoluene	2.65138	2.56822		A		2.369850		14.99662
Cyclohexane	0.37536	0.38512		A		0.333870		13.12283
1,2-Dibromo-3-Chloropropane	542405	1173		L	0.000000	8.067800		0.99941

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.72425	0.85157		A		0.696250		10.89082
Dibromomethane	0.19134	0.24208		A		0.198390		10.32996
trans-1,4-Dichloro-2-butene	0.19815	0.15100		A		0.168380		11.27663
1,2-Dichlorobenzene	7801553	14132		L	0.000000	0.559470		0.99977
1,3-Dichlorobenzene	8227120	14661		L	0.000000	0.532590		0.99946
1,4-Dichlorobenzene	8276943	16177		L	0.000000	0.527660		0.99975
Dichlorodifluoromethane	0.44196			A		0.469410		12.16024
1,1-Dichloroethane *	5005577	14268		L	0.000000	1.992790		0.99993
1,2-Dichloroethene, Total	6738658	17891		L	0.000000	2.986770		0.99960
1,2-Dichloroethane	3925170	10283		L	0.000000	2.540890		0.99985
1,1-Dichloroethene **	2850536	8387		L	0.000000	3.544000		0.99915
cis-1,2-Dichloroethene	0.39028	0.51893		A		0.401080		13.28921
trans-1,2-Dichloroethene	2845482	8727		L	0.000000	3.535150		0.99961
Dichlorofluoromethane	4165584	11367		L	0.000000	2.416970		0.99951
1,1-Dichloro-2-Propanone	0.01520			A		0.013350		11.53668
2,2-Dichloropropane	3965913	9796		L	0.000000	2.553960		0.99883
1,3-Dichloropropane	1.22645	1.45678		A		1.204450		9.95748
1,2-Dichloropropane **	3015295	7708		L	0.000000	3.341220		0.99950
1,1-Dichloropropene	0.39910	0.48852		A		0.391890		11.68528
cis-1,3-Dichloropropene	5095021	7993		Q	-0.029780	1.066990	0.029710	0.99990
trans-1,3-Dichloropropene	1.13262	0.99652		A		0.954880		14.74692
1,3-Dichloropropene, Total	9675959	14352		L	0.000000	0.853140		0.99755
Diisobutylene	5651916	38225		L	0.000000	1.827310		0.99338
Diisopropyl ether	0.79909	1.08146		A		0.816640		14.81638
1,4-Dioxane	0.00354			A		0.003050		13.75512
Ethyl Acetate	0.22865	0.26473		A		0.223410		9.28596
Ethyl ether	0.14339	0.18602		A		0.145350		13.10235
Ethyl Methacrylate	4090463	4555		L	0.000000	1.011290		0.99686
Ethyl tert-butyl ether	0.79733	0.83802		A		0.762750		6.74467
Ethylbenzene **	5008980	8818		L	0.000000	0.819490		0.99884
Freon 113	1932332	4735		L	0.000000	5.278350		0.99732
Heptane	1755151	1440		Q	0.000000	0.106890	0.010320	0.99893
Hexachlorobutadiene	2171750	4774		L	0.000000	2.046100		0.99655
Hexachloroethane	2704495	4100		L	0.000000	1.655260		0.99463
Hexane	0.32606	0.34565		A		0.298980		12.03876
2-Hexanone	8018145	10767		L	0.000000	2.554260		0.99901

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	1252854	1754		L	0.000000	8.214200		0.99319
Isobutyl alcohol	1240478	3162		Q	0.000000	0.016690	-0.000060	0.99696
Isopropyl Alcohol	565855			L	0.000000	90.390106		0.99638
Isopropylbenzene	13865028	17273		L	0.000000	0.306870		0.99769
p-Isopropyltoluene	4090832	3189		L	0.000000	1.088590		0.99589
Methyl acetate	368159	911		L	0.000000	27.414820		0.99920
Methyl acrylate	0.23843	0.24066		A		0.217100		9.87090
Methacrylonitrile	1147887	2466		L	0.000000	8.764000		0.99956
Methyl cyclohexane	4214472	5429		L	0.000000	0.989300		0.99474
Methyl methacrylate	2074794	2802		L	0.000000	4.921760		0.99656
Methyl t-Butyl Ether	6568580	17452		L	0.000000	1.538640		0.99911
4-Methyl-2-Pentanone(MIBK)	0.54286	0.46606		A		0.486180		12.93591
Methylene Chloride	2408202	17808		Q	0.016290	0.218650	0.003040	0.99999
Naphthalene	9469575	8667		Q	0.000000	1.668300	0.078380	0.99885
Nitrobenzene	2017354	2702		Q	0.000000	0.020290	0.000390	0.99974
2-Nitropropane	0.15297	0.13841		A		0.129980		13.91575
Octane	1612879	1022		Q	0.000000	0.229240	0.025370	0.99905
Pentachloroethane	3001444	5606		L	0.000000	1.469520		0.99856
Pentane	0.10646			A		0.101930		10.51224
n-Propanol	0.01646			A		0.018270		7.10063
Propionitrile	0.03389	0.04341		A		0.036240		11.13381
n-Propylbenzene	4495283	4999		L	0.000000	0.975720		0.99912
Styrene	10469570	11121		L	0.000000	0.416920		0.99959
1,1,1,2-Tetrachloroethane	3606951	7668		L	0.000000	1.138280		0.99882
1,1,2,2-Tetrachloroethane *	3477076	7211		L	0.000000	1.249570		0.99992
Tetrachloroethene	2988547	8332		L	0.000000	1.368310		0.99916
Tetrahydrofuran	0.06189			A		0.059630		5.88869
Toluene **	1.99126	2.13236		A		1.824040		12.84315
Total Xylenes	18195008	26953		L	0.000000	0.675500		0.99896
1,2,3-Trichlorobenzene	4246705	5523		L	0.000000	1.035120		0.99834
1,2,4-Trichlorobenzene	5028321	6720		L	0.000000	0.874880		0.99757
1,1,1-Trichloroethane	4670669	11555		L	0.000000	2.160090		0.99931
1,1,2-Trichloroethane	2349482	5441		L	0.000000	1.730840		0.99983
Trichloroethene	3168725	10652		L	0.000000	3.171490		0.99964
Trichlorofluoromethane	0.51863			A		0.552800		13.27586
1,2,3-Trichloropropane	1151190	2182		L	0.000000	3.757430		0.99986

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/28/2015 5/28/2015

Heated Purge: (Y/N) N Calibration Time(s): 14:24 16:06

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15052804.D RRF005 = 15052805.D RRF020 = 15052806.D RRF050 = 15052807.D

RRF100 = 15052808.D RRF200 = 15052809.D RRF00.5 = 15052803.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	12951288	11840		L	0.000000	0.332240		0.99944
1,3,5-Trimethylbenzene	12724513	11958		L	0.000000	0.340000		0.99977
Vinyl Acetate	0.06618	0.07129		A		0.062970		8.93016
Vinyl Chloride **	0.32015			A		0.299420		7.27979
o-Xylene	6164848	8457		L	0.000000	0.671830		0.99663
mp-Xylene	12030159	18496		L	0.000000	0.677350		0.99961
4-Bromofluorobenzene	4071738	6971		L	0.000000	1.075550		0.99939
Dibromofluoromethane				A		0.326240		2.48804
1,2-Dichloroethane-d4	0.33764			A		0.362540		10.40495
Toluene-d8	2.88052	3.02985		A		2.627520		10.85089

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		237		-5.1	100.0	L
Acrolein	0.0308	0.0299			-2.9	100.0	A
Acrylonitrile	0.0805	0.0758			-5.9	100.0	A
Acetonitrile	250		237		-5.3	100.0	Q
tert-Amyl Ethylether	50.0000		38.9216		-22.2	100.0	L
tert-Amyl methyl ether	0.5852	0.5692			-2.7	100.0	A
tert-Amyl Alcohol	250		186		-25.4	100.0	L
Benzene	1.2848	1.2270			-4.5	100.0	A
Benzyl Chloride	50.0000		48.4471		-3.1	100.0	Q
Bromobenzene	0.9649	0.9320			-3.4	100.0	A
Bromochloromethane	0.2046	0.1768			-13.6	100.0	A
Bromodichloromethane	0.4159	0.4112			-1.1	100.0	A
Bromoform	0.4539	0.4125		0.100	-9.1	100.0	A
Bromomethane	50.0000		47.5694		-4.9	100.0	L
2-Butanone	0.0333	0.0294			-11.9	100.0	A
tert.- Butyl Alcohol	0.0185	0.0163			-12.0	100.0	A
tert-Butylbenzene	50.0000		47.7690		-4.5	100.0	L
n-Butylbenzene	50.0000		46.5102		-7.0	100.0	L
sec-Butylbenzene	50.0000		49.7133		-0.6	100.0	L
Carbon Disulfide	0.5800	0.5862			1.1	100.0	A
Carbon Tetrachloride	0.4832	0.4545			-5.9	100.0	A
Chloroacetonitrile	250		230		-8.0	100.0	L
Chlorobenzene	2.5136	2.3020		0.300	-8.4	100.0	A
1-Chlorobutane	0.2636	0.2586			-1.9	100.0	A
Chlorodibromomethane	0.7910	0.7796			-1.4	100.0	A
Chloroethane	0.1821	0.1734			-4.8	100.0	A
2-Chloroethylvinyl ether	50.0000		36.8015		-26.4	100.0	L
Chloroform	50.0000		49.1609		-1.7	20.0	L
1-Chlorohexane	50.0000		44.7149		-10.6	100.0	L
Chloromethane	0.3543	0.3290		0.100	-7.2	100.0	A
Chloroprene	0.4205	0.4052			-3.6	100.0	A
3-Chloro-1-propene	50.0000		52.2763		4.6	100.0	L
o-Chlorotoluene	2.4372	2.6468			8.6	100.0	A
p-Chlorotoluene	2.2608	2.4655			9.1	100.0	A
Cyclohexane	0.4286	0.4389			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1125	0.0994			-11.7	100.0	A
1,2-Dibromoethane	0.6925	0.6270			-9.5	100.0	A
Dibromomethane	0.2115	0.1885			-10.9	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		44.2129		-11.6	100.0	L
1,2-Dichlorobenzene	1.7283	1.6606			-3.9	100.0	A
1,3-Dichlorobenzene	1.8327	1.7582			-4.1	100.0	A
1,4-Dichlorobenzene	1.9306	1.7789			-7.9	100.0	A
Dichlorodifluoromethane	0.5604	0.4879			-12.9	100.0	A
1,1-Dichloroethane	0.5587	0.5026		0.100	-10.0	100.0	A
1,2-Dichloroethene, Total	100		93.1725		-6.8	100.0	L
1,2-Dichloroethane	0.4658	0.4173			-10.4	100.0	A
1,1-Dichloroethene	0.3752	0.3375			-10.1	20.0	A
cis-1,2-Dichloroethene	0.4029	0.3835			-4.8	100.0	A
trans-1,2-Dichloroethene	0.3461	0.3155			-8.8	100.0	A
Dichlorofluoromethane	0.5280	0.4763			-9.8	100.0	A
1,1-Dichloro-2-Propanone	250		215		-14.2	100.0	L
2,2-Dichloropropane	0.4079	0.3817			-6.4	100.0	A
1,3-Dichloropropane	1.1387	1.0885			-4.4	100.0	A
1,2-Dichloropropane	0.2824	0.2780			-1.5	20.0	A
1,1-Dichloropropene	0.4328	0.4237			-2.1	100.0	A
cis-1,3-Dichloropropene	50.0000		47.5647		-4.9	100.0	Q
trans-1,3-Dichloropropene	50.0000		43.0680		-13.9	100.0	L
1,3-Dichloropropene, Total	100		90.6327		-9.4	100.0	L
Diisobutylene	50.0000		50.5871		1.2	100.0	L
Diisopropyl ether	0.6759	0.6197			-8.3	100.0	A
1,4-Dioxane	1250		1007		-19.5	100.0	L
Ethyl Acetate	0.1952	0.1834			-6.1	100.0	A
Ethyl ether	0.1500	0.1412			-5.9	100.0	A
Ethyl Methacrylate	50.0000		42.0274		-15.9	100.0	L
Ethyl tert-butyl ether	0.6930	0.6445			-7.0	100.0	A
Ethylbenzene	1.1461	1.1774			2.7	20.0	A
Freon 113	0.2702	0.2445			-9.5	100.0	A
Heptane	50.0000		48.6481		-2.7	100.0	L
Hexachlorobutadiene	0.5495	0.4655			-15.3	100.0	A
Hexachloroethane	0.4866	0.5083			4.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3426	0.3479			1.6	100.0	A
2-Hexanone	250		232		-7.3	100.0	L
Iodomethane	50.0000		35.6947		-28.6	100.0	L
Isobutyl alcohol	500		321		-35.9	100.0	L
Isopropyl Alcohol	250		207		-17.2	100.0	L
Isopropylbenzene	50.0000		48.8848		-2.2	100.0	L
p-Isopropyltoluene	50.0000		46.6939		-6.6	100.0	L
Methyl acetate	50.0000		44.6906		-10.6	100.0	L
Methyl acrylate	0.2017	0.2000			-0.8	100.0	A
Methacrylonitrile	50.0000		48.5976		-2.8	100.0	L
Methyl cyclohexane	1.0274	1.0882			5.9	100.0	A
Methyl methacrylate	50.0000		42.1466		-15.7	100.0	L
Methyl t-Butyl Ether	0.6772	0.5794			-14.4	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.4047	0.4528			11.9	100.0	A
Methylene Chloride	50.0000		50.6088		1.2	100.0	Q
Naphthalene	50.0000		44.3614		-11.3	100.0	Q
Nitrobenzene	500		438		-12.4	100.0	Q
2-Nitropropane	250		214		-14.4	100.0	L
Octane	50.0000		44.8317		-10.3	100.0	L
Pentachloroethane	0.6496	0.6157			-5.2	100.0	A
Pentane	0.1386	0.1306			-5.7	100.0	A
n-Propanol	0.0184	0.0174			-5.5	100.0	A
Propionitrile	0.0336	0.0307			-8.7	100.0	A
n-Propylbenzene	50.0000		48.7376		-2.5	100.0	L
Styrene	50.0000		47.0335		-5.9	100.0	L
1,1,1,2-Tetrachloroethane	0.8864	0.8120			-8.4	100.0	A
1,1,2,2-Tetrachloroethane	0.7947	0.7169		0.300	-9.8	100.0	A
Tetrachloroethene	0.9157	0.7639			-16.6	100.0	A
Tetrahydrofuran	0.0516	0.0531			2.9	100.0	A
Toluene	1.8476	1.8772			1.6	20.0	A
Total Xylenes	1.3188	1.4128			7.1	100.0	A
1,2,3-Trichlorobenzene	50.0000		43.2957		-13.4	100.0	Q
1,2,4-Trichlorobenzene	50.0000		42.7612		-14.5	100.0	Q
1,1,1-Trichloroethane	0.5574	0.5023			-9.9	100.0	A
1,1,2-Trichloroethane	0.5820	0.5435			-6.6	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date/Time: 5/21/2015 19:52

Lab File ID: 15052152.D Init. Calib. Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3768	0.3369			-10.6	100.0	A
Trichlorofluoromethane	0.6514	0.5813			-10.8	100.0	A
1,2,3-Trichloropropane	0.2923	0.2498			-14.6	100.0	A
1,2,4-Trimethylbenzene	50.0000		47.2511		-5.5	100.0	L
1,3,5-Trimethylbenzene	50.0000		48.4867		-3.0	100.0	L
Vinyl Acetate	0.0609	0.0584			-4.0	100.0	A
Vinyl Chloride	0.2944	0.2828			-3.9	20.0	A
o-Xylene	50.0000		47.3017		-5.4	100.0	Q
mp-Xylene	1.3599	1.4425			6.1	100.0	A
4-Bromofluorobenzene	50.0000		42.9408		-14.1	100.0	L
Dibromofluoromethane	50.0000		43.0623		-13.9	100.0	L
1,2-Dichloroethane-d4	50.0000		42.5168		-15.0	100.0	L
Toluene-d8	50.0000		43.9767		-12.0	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms17.i Calibration Date/Time: 5/30/2015 00:01

Lab File ID: 17052951.D Init. Calib. Date(s): 5/29/2015 5/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:15 02:31

GC Column: RTXVMS ID: 0.18 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0069	0.0070			2.5	100.0	A
Acrolein	0.0166	0.0145			-12.1	100.0	A
Acrylonitrile	0.0356	0.0372			4.5	100.0	A
Acetonitrile	250		316		26.4	100.0	Q
tert-Amyl Ethylether	0.4275	0.3517			-17.7	100.0	A
tert-Amyl methyl ether	0.4722	0.4281			-9.4	100.0	A
tert-Amyl Alcohol	250		284		13.5	100.0	Q
Benzene	0.8465	0.9028			6.7	100.0	A
Benzyl Chloride	50.0000		19.8217		-60.4	100.0	L
Bromobenzene	0.7542	0.7513			-0.4	100.0	A
Bromochloromethane	0.0975	0.1007			3.3	100.0	A
Bromodichloromethane	0.2661	0.2466			-7.3	100.0	A
Bromoform	0.3236	0.2409		0.100	-25.6	100.0	A
Bromomethane	0.1999	0.2063			3.2	100.0	A
2-Butanone	0.0141	0.0134			-5.0	100.0	A
tert.- Butyl Alcohol	250		211		-15.6	100.0	Q
tert-Butylbenzene	0.4432	0.4506			1.7	100.0	A
n-Butylbenzene	0.4578	0.4921			7.5	100.0	A
sec-Butylbenzene	2.6282	2.6870			2.2	100.0	A
Carbon Disulfide	0.3888	0.4045			4.0	100.0	A
Carbon Tetrachloride	0.2516	0.2333			-7.3	100.0	A
Chloroacetonitrile	250		188		-24.8	100.0	L
Chlorobenzene	1.5481	1.5631		0.300	1.0	100.0	A
1-Chlorobutane	0.1847	0.1988			7.7	100.0	A
Chlorodibromomethane	0.4681	0.4078			-12.9	100.0	A
Chloroethane	0.1505	0.1426			-5.2	100.0	A
2-Chloroethylvinyl ether	50.0000		12.0733		-75.9	100.0	L
Chloroform	50.0000		50.3560		0.7	20.0	L
1-Chlorohexane	0.6769	0.7027			3.8	100.0	A
Chloromethane	50.0000		53.5869	0.100	7.2	100.0	Q
Chloroprene	0.2465	0.2635			6.9	100.0	A
3-Chloro-1-propene	50.0000		49.8974		-0.2	100.0	L
o-Chlorotoluene	2.2413	2.2360			-0.2	100.0	A
p-Chlorotoluene	2.0640	2.0701			0.3	100.0	A
Cyclohexane	0.2444	0.2569			5.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms17.i Calibration Date/Time: 5/30/2015 00:01

Lab File ID: 17052951.D Init. Calib. Date(s): 5/29/2015 5/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:15 02:31

GC Column: RTXVMS ID: 0.18 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.0593	0.0401			-32.4	100.0	A
1,2-Dibromoethane	0.4011	0.3736			-6.9	100.0	A
Dibromomethane	0.1235	0.1139			-7.7	100.0	A
trans-1,4-Dichloro-2-butene	0.1075	0.0683			-36.5	100.0	A
1,2-Dichlorobenzene	1.1060	1.0395			-6.0	100.0	A
1,3-Dichlorobenzene	1.2160	1.1702			-3.8	100.0	A
1,4-Dichlorobenzene	1.2827	1.1904			-7.2	100.0	A
Dichlorodifluoromethane	50.0000		54.9190		9.8	100.0	L
1,1-Dichloroethane	0.3216	0.3340		0.100	3.9	100.0	A
1,2-Dichloroethene, Total	0.2426	0.2518			3.8	100.0	A
1,2-Dichloroethane	0.2368	0.2210			-6.7	100.0	A
1,1-Dichloroethene	0.1917	0.2088			9.0	20.0	A
cis-1,2-Dichloroethene	0.2580	0.2714			5.2	100.0	A
trans-1,2-Dichloroethene	0.2271	0.2322			2.2	100.0	A
Dichlorofluoromethane	0.3518	0.3133			-10.9	100.0	A
1,1-Dichloro-2-Propanone	250		122		-51.3	100.0	L
2,2-Dichloropropane	0.2366	0.2244			-5.1	100.0	A
1,3-Dichloropropane	0.7049	0.6602			-6.3	100.0	A
1,2-Dichloropropane	0.2409	0.2474			2.7	20.0	A
1,1-Dichloropropene	0.2711	0.2918			7.6	100.0	A
cis-1,3-Dichloropropene	0.7746	0.7600			-1.9	100.0	A
trans-1,3-Dichloropropene	0.6542	0.5866			-10.3	100.0	A
1,3-Dichloropropene, Total	0.7144	0.6733			-5.7	100.0	A
Diisobutylene	50.0000		51.4492		2.9	100.0	L
Diisopropyl ether	0.5223	0.5301			1.5	100.0	A
1,4-Dioxane	1250		1274		1.9	100.0	L
Ethyl Acetate	50.0000		38.5863		-22.8	100.0	L
Ethyl ether	0.0791	0.0755			-4.6	100.0	A
Ethyl Methacrylate	0.5352	0.4883			-8.8	100.0	A
Ethyl tert-butyl ether	0.5025	0.4825			-4.0	100.0	A
Ethylbenzene	0.8474	0.8858			4.5	20.0	A
Freon 113	0.1271	0.1367			7.5	100.0	A
Heptane	0.0986	0.1002			1.6	100.0	A
Hexachlorobutadiene	50.0000		50.0643		0.1	100.0	L
Hexachloroethane	50.0000		32.2470		-35.5	100.0	L

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms17.i Calibration Date/Time: 5/30/2015 00:01

Lab File ID: 17052951.D Init. Calib. Date(s): 5/29/2015 5/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:15 02:31

GC Column: RTXVMS ID: 0.18 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		45.9151		-8.2	100.0	L
2-Hexanone	0.1912	0.1675			-12.4	100.0	A
Iodomethane	50.0000		49.3882		-1.2	100.0	Q
Isobutyl alcohol	500		372		-25.5	100.0	Q
Isopropyl Alcohol	250		248		-1.0	100.0	Q
Isopropylbenzene	2.9169	3.0580			4.8	100.0	A
p-Isopropyltoluene	0.5547	0.5727			3.2	100.0	A
Methyl acetate	50.0000		48.7390		-2.5	100.0	Q
Methyl acrylate	50.0000		38.9797		-22.0	100.0	L
Methacrylonitrile	0.0591	0.0554			-6.1	100.0	A
Methyl cyclohexane	0.7332	0.7466			1.8	100.0	A
Methyl methacrylate	0.1174	0.1035			-11.8	100.0	A
Methyl t-Butyl Ether	0.4256	0.3591			-15.6	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.3116	0.2684			-13.9	100.0	A
Methylene Chloride	50.0000		59.4261		18.9	100.0	Q
Naphthalene	0.7391	0.4973			-32.7	100.0	A
Nitrobenzene	500		571		14.3	100.0	Q
2-Nitropropane	0.0608	0.0426			-30.0	100.0	A
Octane	0.1982	0.1919			-3.2	100.0	A
Pentachloroethane	0.4211	0.3481			-17.3	100.0	A
Pentane	50.0000		49.1253		-1.7	100.0	L
n-Propanol	0.0096	0.0088			-8.1	100.0	A
Propionitrile	0.0128	0.0127			-0.3	100.0	A
n-Propylbenzene	0.8040	0.8253			2.7	100.0	A
Styrene	1.8523	1.9416			4.8	100.0	A
1,1,1,2-Tetrachloroethane	0.4695	0.4446			-5.3	100.0	A
1,1,2,2-Tetrachloroethane	0.5927	0.4841		0.300	-18.3	100.0	A
Tetrachloroethene	0.5039	0.5237			3.9	100.0	A
Tetrahydrofuran	250		204		-18.4	100.0	Q
Toluene	1.3557	1.4271			5.3	20.0	A
Total Xylenes	0.9642	1.0121			5.0	100.0	A
1,2,3-Trichlorobenzene	0.2537	0.1406			-44.6	100.0	A
1,2,4-Trichlorobenzene	0.4058	0.2970			-26.8	100.0	A
1,1,1-Trichloroethane	0.2775	0.2924			5.4	100.0	A
1,1,2-Trichloroethane	0.3937	0.3620			-8.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms17.i Calibration Date/Time: 5/30/2015 00:01

Lab File ID: 17052951.D Init. Calib. Date(s): 5/29/2015 5/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:15 02:31

GC Column: RTXVMS ID: 0.18 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2434	0.2539			4.3	100.0	A
Trichlorofluoromethane	0.4059	0.3935			-3.1	100.0	A
1,2,3-Trichloropropane	0.1517	0.1293			-14.8	100.0	A
1,2,4-Trimethylbenzene	2.1449	2.2241			3.7	100.0	A
1,3,5-Trimethylbenzene	2.1899	2.2837			4.3	100.0	A
Vinyl Acetate	50.0000		48.1596		-3.7	100.0	Q
Vinyl Chloride	50.0000		50.2049		0.4	20.0	Q
o-Xylene	0.9110	0.9653			6.0	100.0	A
mp-Xylene	0.9908	1.0355			4.5	100.0	A
4-Bromofluorobenzene	0.7116	0.7039			-1.1	100.0	A
Dibromofluoromethane	0.2040	0.1873			-8.2	100.0	A
1,2-Dichloroethane-d4	0.2266	0.1910			-15.7	100.0	A
Toluene-d8	2.1112	1.9961			-5.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2181443

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 15052155.D Lab Sample ID: 2181443

Date Analyzed: 5/21/2015 Time Analyzed: 20:59

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2181444(LCS)	2181444	15052156.D	21:16
TB-0518-15	2071807001	15052174.D	02:24
MRC-MW-111A-051815	2071807002	15052175.D	02:42
MRC-MW-111B-051815	2071807003	15052176.D	02:59
MRC-MW-90B-051815	2071807005	15052178.D	03:33
MRC-MW-98A-051815	2071807006	15052179.D	03:50
MRC-MW-98B-051815	2071807007	15052180.D	04:07

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.25	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2181443(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2181443

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052155.D

Level (low/med): Date Received: 5/21/15

% Moisture: not dec. 100.0 Date Analyzed: 5/21/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2183121

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 15052813A.D Lab Sample ID: 2183121

Date Analyzed: 5/28/2015 Time Analyzed: 17:14

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2183122(LCS)	2183122	15052814A.D	17:31
MRC-MW-109A-051815	2071807004	15052830.D	22:05

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2183121(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2183121

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052813A.D

Level (low/med): Date Received: 5/27/15

% Moisture: not dec. 100.0 Date Analyzed: 5/28/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.43	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.41	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.25	J
106-46-7	1,4-Dichlorobenzene	0.37	J
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2183121(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2183121

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052813A.D

Level (low/med): Date Received: 5/27/15

% Moisture: not dec. 100.0 Date Analyzed: 5/28/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2184389

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-035

Lab File ID: 17052953A.D Lab Sample ID: 2184389

Date Analyzed: 5/30/2015 Time Analyzed: 00:48

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: ms17.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2184390(LCS)	2184390	17052954A.D	01:11
MRC-MW-111B-051815-DL	2071807003	17052963.D	04:33
MRC-MW-98B-051815-DL2	2071807007	17052964.D	04:56

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2184389(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2184389

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 17052953A.D

Level (low/med): Date Received: 5/29/15

% Moisture: not dec. 100.0 Date Analyzed: 5/30/15

GC Column: RTXVMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2184389(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2184389

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 17052953A.D

Level (low/med): Date Received: 5/29/15

% Moisture: not dec. 100.0 Date Analyzed: 5/30/15

GC Column: RTXVMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.2	J
120-82-1	1,2,4-Trichlorobenzene	1.0	J
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-035

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2180034(LCS)	89.0	85.1	86.2	87.6	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-035

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2181443(MB)	87.2	88.5	93.5	91.9	0
03	2181444(LCS)	83.1	84.3	87.0	84.7	0
04	TB-0518-15	90.1	93.2	98.2	92.9	0
05	MRC-MW-111A-051815	90.9	96.8	100	94.3	0
06	MRC-MW-111B-051815	86.9	93.2	96.9	94.8	0
07	MRC-MW-90B-051815	88.8	95.9	101	94.6	0
08	MRC-MW-98A-051815	89.0	98.1	104	95.1	0
09	MRC-MW-98B-051815	89.1	94.3	99.0	94.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-035

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
10	2183121(MB)	92.5	91.8	86.5	97.3	0
11	2183122(LCS)	85.4	84.1	79.3	89.7	0
12	MRC-MW-109A-051815	92.6	98.1	92.3	97.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-035

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
13	2184389(MB)	99.2	85.0	81.2	86.9	0
14	2184390(LCS)	88.5	81.8	85.8	108	0
15	MRC-MW-111B-051815-DL50	103	87.9	85.8	89.8	0
16	MRC-MW-98B-051815-DL20	100	89.0	86.3	89.3	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		95.5	95.5	(40-151)
Benzene	20.0		20.0	99.8	(80-124)
Bromochloromethane	20.0		19.8	98.9	(73-117)
Bromodichloromethane	20.0		19.9	99.3	(79-126)
Bromoform	20.0		18.0	90.1	(70-123)
Bromomethane	20.0		20.7	104	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		16.5	82.6	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		19.3	96.7	(85-117)
Chlorodibromomethane	20.0		19.4	97	(77-122)
Chloroethane	20.0		15.8	79.1	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		16.8	84	(38-156)
Cyclohexane	20.0		20.6	103	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.7	(59-133)
1,2-Dibromoethane	20.0		18.6	92.9	(80-124)
1,2-Dichlorobenzene	20.0		20.3	101	(82-118)
1,3-Dichlorobenzene	20.0		20.5	102	(81-118)
1,4-Dichlorobenzene	20.0		19.9	99.4	(81-116)
Dichlorodifluoromethane	20.0		14.2	71.2	(17-166)
1,1-Dichloroethane	20.0		18.5	92.5	(78-124)
1,2-Dichloroethane	20.0		19.4	96.8	(70-133)
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		19.6	97.8	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.2	(71-122)
1,2-Dichloropropane	20.0		20.2	101	(81-127)
cis-1,3-Dichloropropene	20.0		17.8	89.2	(81-121)
trans-1,3-Dichloroprope	20.0		16.6	82.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2180034

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.1	(1-280)
Ethylbenzene	20.0		21.2	106	(80-124)
Freon 113	20.0		18.3	91.6	(50-130)
2-Hexanone	100		84.4	84.4	(65-154)
Isopropylbenzene	20.0		18.8	93.8	(73-129)
Methyl acetate	20.0		18.9	94.6	(70-130)
Methyl cyclohexane	20.0		21.1	105	(70-130)
Methyl t-Butyl Ether	20.0		17.8	88.9	(69-115)
4-Methyl-2-Pentanone(MI	100		105	105	(71-146)
Methylene Chloride	20.0		20.9	104	(76-121)
Styrene	20.0		19.0	94.8	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.0	95.1	(74-135)
Tetrachloroethene	20.0		19.1	95.6	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.5	(61-126)
1,2,4-Trichlorobenzene	20.0		16.8	84.2	(67-123)
1,1,1-Trichloroethane	20.0		19.1	95.4	(66-130)
1,1,2-Trichloroethane	20.0		19.4	96.9	(82-126)
Trichloroethene	20.0		20.0	100	(77-124)
Trichlorofluoromethane	20.0		17.1	85.6	(38-123)
Vinyl Chloride	20.0		17.8	88.9	(27-138)
o-Xylene	20.0		17.9	89.6	(79-124)
mp-Xylene	40.0		43.4	109	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		101	101	(40-151)
Benzene	20.0		20.1	101	(80-124)
Bromochloromethane	20.0		18.9	94.5	(73-117)
Bromodichloromethane	20.0		20.1	101	(79-126)
Bromoform	20.0		17.7	88.7	(70-123)
Bromomethane	20.0		17.1	85.6	(45-148)
2-Butanone	100		106	106	(50-152)
Carbon Disulfide	20.0		14.2	71	(57-131)
Carbon Tetrachloride	20.0		19.1	95.5	(62-132)
Chlorobenzene	20.0		19.3	96.5	(85-117)
Chlorodibromomethane	20.0		18.8	93.8	(77-122)
Chloroethane	20.0		15.1	75.7	(51-142)
Chloroform	20.0		21.7	108	(78-122)
Chloromethane	20.0		15.2	75.9	(38-156)
Cyclohexane	20.0		19.1	95.7	(66-130)
1,2-Dibromo-3-Chloropro	20.0		16.9	84.3	(59-133)
1,2-Dibromoethane	20.0		18.5	92.7	(80-124)
1,2-Dichlorobenzene	20.0		20.0	100	(82-118)
1,3-Dichlorobenzene	20.0		20.5	103	(81-118)
1,4-Dichlorobenzene	20.0		19.8	99.1	(81-116)
Dichlorodifluoromethane	20.0		10.8	54.1	(17-166)
1,1-Dichloroethane	20.0		18.8	93.9	(78-124)
1,2-Dichloroethane	20.0		19.5	97.6	(70-133)
1,1-Dichloroethene	20.0		16.1	80.5	(63-128)
cis-1,2-Dichloroethene	20.0		19.5	97.5	(78-125)
trans-1,2-Dichloroethen	20.0		18.8	93.8	(71-122)
1,2-Dichloropropane	20.0		20.4	102	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.3	(81-121)
trans-1,3-Dichloroprope	20.0		16.9	84.5	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2181444

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		406	81.2	(1-280)
Ethylbenzene	20.0		20.9	105	(80-124)
Freon 113	20.0		16.7	83.3	(50-130)
2-Hexanone	100		90.0	90	(65-154)
Isopropylbenzene	20.0		18.8	94.2	(73-129)
Methyl acetate	20.0		19.6	97.9	(70-130)
Methyl cyclohexane	20.0		19.7	98.5	(70-130)
Methyl t-Butyl Ether	20.0		17.3	86.7	(69-115)
4-Methyl-2-Pentanone(MI	100		114	114	(71-146)
Methylene Chloride	20.0		21.0	105	(76-121)
Styrene	20.0		19.2	95.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		17.8	89.1	(72-124)
Toluene	20.0		20.6	103	(80-125)
1,2,3-Trichlorobenzene	20.0		15.7	78.4	(61-126)
1,2,4-Trichlorobenzene	20.0		15.1	75.7	(67-123)
1,1,1-Trichloroethane	20.0		18.4	92.2	(66-130)
1,1,2-Trichloroethane	20.0		19.8	99.2	(82-126)
Trichloroethene	20.0		19.7	98.3	(77-124)
Trichlorofluoromethane	20.0		15.5	77.3	(38-123)
Vinyl Chloride	20.0		16.0	80.1	(27-138)
o-Xylene	20.0		17.1	85.7	(79-124)
mp-Xylene	40.0		42.1	105	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2183122

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		93.0	93	(40-151)
Benzene	20.0		19.3	96.7	(80-124)
Bromochloromethane	20.0		19.4	97	(73-117)
Bromodichloromethane	20.0		18.5	92.4	(79-126)
Bromoform	20.0		17.2	85.8	(70-123)
Bromomethane	20.0		20.4	102	(45-148)
2-Butanone	100		99.0	99	(50-152)
Carbon Disulfide	20.0		15.1	75.3	(57-131)
Carbon Tetrachloride	20.0		21.1	106	(62-132)
Chlorobenzene	20.0		20.5	102	(85-117)
Chlorodibromomethane	20.0		18.6	92.9	(77-122)
Chloroethane	20.0		16.5	82.6	(51-142)
Chloroform	20.0		21.9	110	(78-122)
Chloromethane	20.0		17.6	88.2	(38-156)
Cyclohexane	20.0		23.0	115	(66-130)
1,2-Dibromo-3-Chloropro	20.0		14.9	74.7	(59-133)
1,2-Dibromoethane	20.0		18.5	92.4	(80-124)
1,2-Dichlorobenzene	20.0		18.6	93.2	(82-118)
1,3-Dichlorobenzene	20.0		19.2	96.2	(81-118)
1,4-Dichlorobenzene	20.0		19.7	98.7	(81-116)
Dichlorodifluoromethane	20.0		15.9	79.3	(17-166)
1,1-Dichloroethane	20.0		20.2	101	(78-124)
1,2-Dichloroethane	20.0		20.5	102	(70-133)
1,1-Dichloroethene	20.0		19.4	97	(63-128)
cis-1,2-Dichloroethene	20.0		18.8	94	(78-125)
trans-1,2-Dichloroethen	20.0		20.9	104	(71-122)
1,2-Dichloropropane	20.0		19.3	96.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.9	89.6	(81-121)
trans-1,3-Dichloroprope	20.0		19.7	98.5	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2183122

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		480	95.9	(1-280)
Ethylbenzene	20.0		18.8	94.1	(80-124)
Freon 113	20.0		20.5	103	(50-130)
2-Hexanone	100		86.4	86.4	(65-154)
Isopropylbenzene	20.0		18.7	93.7	(73-129)
Methyl acetate	20.0		19.4	96.8	(70-130)
Methyl cyclohexane	20.0		20.1	100	(70-130)
Methyl t-Butyl Ether	20.0		18.0	90.1	(69-115)
4-Methyl-2-Pentanone(MI	100		102	102	(71-146)
Methylene Chloride	20.0		21.3	107	(76-121)
Styrene	20.0		17.8	88.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.3	102	(74-135)
Tetrachloroethene	20.0		21.8	109	(72-124)
Toluene	20.0		20.8	104	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.4	(61-126)
1,2,4-Trichlorobenzene	20.0		13.5	67.5	(67-123)
1,1,1-Trichloroethane	20.0		19.9	99.3	(66-130)
1,1,2-Trichloroethane	20.0		19.9	99.7	(82-126)
Trichloroethene	20.0		20.9	105	(77-124)
Trichlorofluoromethane	20.0		17.2	85.9	(38-123)
Vinyl Chloride	20.0		18.0	90.2	(27-138)
o-Xylene	20.0		15.9	79.4	(79-124)
mp-Xylene	40.0		37.7	94.3	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2184390

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		125	125	(40-151)
Benzene	20.0		20.2	101	(80-124)
Bromochloromethane	20.0		17.9	89.6	(73-117)
Bromodichloromethane	20.0		18.3	91.5	(79-126)
Bromoform	20.0		12.8	64.1*	(70-123)
Bromomethane	20.0		19.2	95.9	(45-148)
2-Butanone	100		95.1	95.1	(50-152)
Carbon Disulfide	20.0		19.1	95.4	(57-131)
Carbon Tetrachloride	20.0		17.0	84.9	(62-132)
Chlorobenzene	20.0		20.0	100	(85-117)
Chlorodibromomethane	20.0		20.5	103	(77-122)
Chloroethane	20.0		18.2	90.9	(51-142)
Chloroform	20.0		18.9	94.3	(78-122)
Chloromethane	20.0		22.9	115	(38-156)
Cyclohexane	20.0		18.0	89.9	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.1	85.3	(59-133)
1,2-Dibromoethane	20.0		25.1	125*	(80-124)
1,2-Dichlorobenzene	20.0		20.0	100	(82-118)
1,3-Dichlorobenzene	20.0		18.7	93.5	(81-118)
1,4-Dichlorobenzene	20.0		18.4	92.1	(81-116)
Dichlorodifluoromethane	20.0		17.4	87.2	(17-166)
1,1-Dichloroethane	20.0		21.4	107	(78-124)
1,2-Dichloroethane	20.0		20.2	101	(70-133)
1,1-Dichloroethene	20.0		22.3	111	(63-128)
cis-1,2-Dichloroethene	20.0		16.7	83.7	(78-125)
trans-1,2-Dichloroethen	20.0		23.3	117	(71-122)
1,2-Dichloropropane	20.0		19.5	97.7	(81-127)
cis-1,3-Dichloropropene	20.0		22.5	113	(81-121)
trans-1,3-Dichloroprope	20.0		22.5	112	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Laboratory Control Spike - Sample No: 2184390

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		391	78.1	(1-280)
Ethylbenzene	20.0		20.0	100	(80-124)
Freon 113	20.0		23.6	118	(50-130)
2-Hexanone	100		96.9	96.9	(65-154)
Isopropylbenzene	20.0		16.3	81.6	(73-129)
Methyl acetate	20.0		24.2	121	(70-130)
Methyl cyclohexane	20.0		24.6	123	(70-130)
Methyl t-Butyl Ether	20.0		21.5	107	(69-115)
4-Methyl-2-Pentanone(MI	100		122	122	(71-146)
Methylene Chloride	20.0		27.8	139*	(76-121)
Styrene	20.0		16.4	82.1	(79-123)
1,1,2,2-Tetrachloroetha	20.0		17.1	85.4	(74-135)
Tetrachloroethene	20.0		24.1	121	(72-124)
Toluene	20.0		24.9	125	(80-125)
1,2,3-Trichlorobenzene	20.0		22.3	111	(61-126)
1,2,4-Trichlorobenzene	20.0		21.0	105	(67-123)
1,1,1-Trichloroethane	20.0		18.8	93.9	(66-130)
1,1,2-Trichloroethane	20.0		23.8	119	(82-126)
Trichloroethene	20.0		19.9	99.3	(77-124)
Trichlorofluoromethane	20.0		17.8	88.8	(38-123)
Vinyl Chloride	20.0		19.7	98.6	(27-138)
o-Xylene	20.0		19.9	99.5	(79-124)
mp-Xylene	40.0		40.0	100	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 3 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Lab File ID: 15051957.D Date Analyzed: 5/19/2015

Instrument ID: ms15.i Time Analyzed: 20:01

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	442721	5.913	482015	7.686	1040326	3.910
UPPER LIMIT	885442	6.413	964030	8.186	2080652	4.410
LOWER LIMIT	221361	5.413	241008	7.186	520163	3.410
SAMPLE NO.						
2180034(LCS)	443472	5.913	470706	7.686	1024069	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Lab File ID: 15052152.D Date Analyzed: 5/21/2015

Instrument ID: ms15.i Time Analyzed: 19:52

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	446497	5.913	474860	7.686	1061227	3.910
UPPER LIMIT	892994	6.413	949720	8.186	2122454	4.410
LOWER LIMIT	223249	5.413	237430	7.186	530614	3.410
SAMPLE NO.						
1800	446497	5.913	474860	7.686	1061227	3.910
2181443(MB)	318636	5.912	286997	7.686	865950	3.910
2181444(LCS)	433839	5.913	450022	7.686	982691	3.910
TB-0518-15	304271	5.913	260828	7.686	815332	3.910
MRC-MW-111A-05181	284907	5.913	251704	7.686	773755	3.910
MRC-MW-111B-05181	307417	5.913	266255	7.686	800456	3.910
MRC-MW-90B-051815	285011	5.913	251255	7.686	758437	3.910
MRC-MW-98A-051815	278119	5.912	249033	7.686	740114	3.910
MRC-MW-98B-051815	290812	5.912	249710	7.686	756917	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Lab File ID: 15052807.D Date Analyzed: 5/28/2015

Instrument ID: ms15.i Time Analyzed: 15:32

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	543956	5.913	559054	7.686	1343241	3.910
UPPER LIMIT	1087912	6.413	1118108	8.186	2686482	4.410
LOWER LIMIT	271978	5.413	279527	7.186	671621	3.410
SAMPLE NO.						
2183121(MB)	418161	5.913	363677	7.686	1165969	3.910
2183122(LCS)	543164	5.913	571669	7.686	1332051	3.910
MRC-MW-109A-05181	374282	5.913	316897	7.686	1042698	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Lab File ID: 17052857.D Date Analyzed: 5/29/2015

Instrument ID: ms17.i Time Analyzed: 01:46

GC Column: RTXVMS ID: 0.1 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	690636	5.578	544367	7.318	1680146	3.630
UPPER LIMIT	1381272	6.078	1088734	7.818	3360292	4.130
LOWER LIMIT	345318	5.078	272184	6.818	840073	3.130
SAMPLE NO.						
2183888(LCS)	680302	5.578	538963	7.318	1648469	3.630

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Lab File ID: 17052951.D Date Analyzed: 5/30/2015

Instrument ID: ms17.i Time Analyzed: 00:01

GC Column: RTXVMS ID: 0.1 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	711591	5.578	559188	7.319	1749602	3.630
UPPER LIMIT	1423182	6.078	1118376	7.819	3499204	4.130
LOWER LIMIT	355796	5.078	279594	6.819	874801	3.130
SAMPLE NO.						
1800	711591	5.578	559188	7.319	1749602	3.630
2184389(MB)	684197	5.578	530073	7.318	1701700	3.630
2184390(LCS)	561320	5.578	531056	7.318	1641698	3.630
MRC-MW-111B-05181	488151	5.578	389219	7.318	1226845	3.630
MRC-MW-98B-051815	491425	5.578	399221	7.324	1217010	3.630

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Semivolatile Organics by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/30/15	1402	8.36			
02	2184609	2184609	05/30/15	1428	8.36			
03	2184610LCSLO	2184610	05/30/15	1452	8.36			
04	MRC-MW-111A-	2071807002	05/30/15	1834	8.36			
05	MRC-MW-111B-	2071807003	05/30/15	1859	8.36			
06	MIDCHECK-5	MIDCHECK-5	05/30/15	1923	8.36			
07	MRC-MW-90B-0	2071807005	05/30/15	1948	8.36			
08	MRC-MW-98A-0	2071807006	05/30/15	2013	8.36			
09	MRC-MW-98B-0	2071807007	05/30/15	2039	8.36			
10	1800	1800	05/31/15	0909	8.36			
11	MRC-MW-98B-0	2071807007	05/31/15	0939	8.36			
12	MRC-MW-111B-	2071807003	05/31/15	1032	8.36			
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date: 05/30/15 Time: 1402

Lab File ID: 12053001 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.41e-003	3.5e-003	1.3080559	0.00001	-2.57	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6160684	0.6160684	0.00001	-13.47	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date: 05/30/15 Time: 1923

Lab File ID: 12053014 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.96e-002	5.e-002	1.6095694	0.00001	-20.80	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6214328	0.6214328	0.00001	-12.72	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Instrument ID: MS12 Calibration Date: 05/31/15 Time: 0909

Lab File ID: 12053101 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.08e-003	3.5e-003	1.0941472	0.00001	16.57	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6134116	0.6134116	0.00001	-13.85	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Lab File ID: 12053002 Lab Sample ID: 2184609

Instrument ID: MS12 Date Extracted: 05/30/15

Matrix: (soil/water) WATER Date Analyzed: 05/30/15

Level:(low/med) LOW Time Analyzed: 1428

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2184610LCSLO	2184610	12053003	05/30/15
02	MRC-MW-111A-	2071807002	12053012	05/30/15
03	MRC-MW-111B-	2071807003	12053013	05/30/15
04	MRC-MW-90B-0	2071807005	12053015	05/30/15
05	MRC-MW-98A-0	2071807006	12053016	05/30/15
06	MRC-MW-98B-0	2071807007	12053017	05/30/15
07	MRC-MW-98B-0	2071807007	12053102	05/31/15
08	MRC-MW-111B-	2071807003	12053104	05/31/15
09				
10				
11				
12				
13				
14				
15				
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30				

COMMENTS:

FORM IV SV

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2184609

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Matrix: (soil/water) WATER Lab Sample ID: 2184609

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12053002

Level: (low/med) LOW Date Received: 05/30/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/30/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/30/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2184609	83								0
02	2184610LCSLO	97								0
03	MRC-MW-111A-	81								0
04	MRC-MW-111B-	86								0
05	MRC-MW-90B-0	84								0
06	MRC-MW-98A-0	83								0
07	MRC-MW-98B-0	79								0
08	MRC-MW-98B-0	86								0
09	MRC-MW-111B-	87								0
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

Matrix Spike - Sample No.: 2184610LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0587560	84	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM035

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

Total Metals by 6020A Summary Forms

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.0992	0.1000	99		90 - 110	M	5/26/2015	10:22	A052615B 0
	Arsenic	0.0992	0.1000	99		90 - 110	M	5/26/2015	10:22	A052615B 0
	Barium	0.0978	0.1000	98		90 - 110	M	5/26/2015	10:22	A052615B 0
	Beryllium	0.0992	0.1000	99		90 - 110	M	5/26/2015	10:22	A052615B 0
	Cadmium	0.0956	0.1000	96		90 - 110	M	5/26/2015	10:22	A052615B 0
	Chromium	0.1007	0.1000	101		90 - 110	M	5/26/2015	10:22	A052615B 0
	Cobalt	0.0996	0.1000	100		90 - 110	M	5/26/2015	10:22	A052615B 0
	Copper	0.0964	0.1000	96		90 - 110	M	5/26/2015	10:22	A052615B 0
	Lead	0.0985	0.1000	98		90 - 110	M	5/26/2015	10:22	A052615B 0
	Manganese	0.0997	0.1000	100		90 - 110	M	5/26/2015	10:22	A052615B 0
	Molybdenum	0.0957	0.1000	96		90 - 110	M	5/26/2015	10:22	A052615B 0
	Nickel	0.0984	0.1000	98		90 - 110	M	5/26/2015	10:22	A052615B 0
	Selenium	0.0983	0.1000	98		90 - 110	M	5/26/2015	10:22	A052615B 0
	Silver	0.0981	0.1000	98		90 - 110	M	5/26/2015	10:22	A052615B 0
	Thallium	0.0965	0.1000	96		90 - 110	M	5/26/2015	10:22	A052615B 0
	Vanadium	0.1011	0.1000	101		90 - 110	M	5/26/2015	10:22	A052615B 0
LLICV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/26/2015	10:30	A052615B 0
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/26/2015	10:30	A052615B 0
	Barium	0.0049	0.0050	98		70 - 130	M	5/26/2015	10:30	A052615B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/26/2015	10:30	A052615B 0
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/26/2015	10:30	A052615B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	5/26/2015	10:30	A052615B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	5/26/2015	10:30	A052615B 0
	Copper	0.0044	0.0050	88		70 - 130	M	5/26/2015	10:30	A052615B 0
	Lead	0.0018	0.0020	90		70 - 130	M	5/26/2015	10:30	A052615B 0
	Manganese	0.0047	0.0050	94		70 - 130	M	5/26/2015	10:30	A052615B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/26/2015	10:30	A052615B 0
	Nickel	0.0048	0.0050	96		70 - 130	M	5/26/2015	10:30	A052615B 0
	Selenium	0.0048	0.0050	96		70 - 130	M	5/26/2015	10:30	A052615B 0
	Silver	0.0019	0.0020	95		70 - 130	M	5/26/2015	10:30	A052615B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	5/26/2015	10:30	A052615B 0
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/26/2015	10:30	A052615B 0

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0980	0.1000	98		90 - 110	M	5/26/2015	11:40	A052615B 0
	Arsenic	0.1002	0.1000	100		90 - 110	M	5/26/2015	11:40	A052615B 0
	Barium	0.0974	0.1000	97		90 - 110	M	5/26/2015	11:40	A052615B 0
	Beryllium	0.0961	0.1000	96		90 - 110	M	5/26/2015	11:40	A052615B 0
	Cadmium	0.0962	0.1000	96		90 - 110	M	5/26/2015	11:40	A052615B 0
	Chromium	0.0999	0.1000	100		90 - 110	M	5/26/2015	11:40	A052615B 0
	Cobalt	0.1005	0.1000	100		90 - 110	M	5/26/2015	11:40	A052615B 0
	Copper	0.1007	0.1000	101		90 - 110	M	5/26/2015	11:40	A052615B 0
	Lead	0.0985	0.1000	98		90 - 110	M	5/26/2015	11:40	A052615B 0
	Manganese	0.1005	0.1000	100		90 - 110	M	5/26/2015	11:40	A052615B 0
	Molybdenum	0.0967	0.1000	97		90 - 110	M	5/26/2015	11:40	A052615B 0
	Nickel	0.0986	0.1000	99		90 - 110	M	5/26/2015	11:40	A052615B 0
	Selenium	0.0973	0.1000	97		90 - 110	M	5/26/2015	11:40	A052615B 0
	Silver	0.0972	0.1000	97		90 - 110	M	5/26/2015	11:40	A052615B 0
	Thallium	0.0960	0.1000	96		90 - 110	M	5/26/2015	11:40	A052615B 0
	Vanadium	0.1003	0.1000	100		90 - 110	M	5/26/2015	11:40	A052615B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/26/2015	11:48	A052615B 0
	Arsenic	0.0031	0.0030	103		70 - 130	M	5/26/2015	11:48	A052615B 0
	Barium	0.0049	0.0050	98		70 - 130	M	5/26/2015	11:48	A052615B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/26/2015	11:48	A052615B 0
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/26/2015	11:48	A052615B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	5/26/2015	11:48	A052615B 0
	Cobalt	0.0046	0.0050	92		70 - 130	M	5/26/2015	11:48	A052615B 0
	Copper	0.0044	0.0050	88		70 - 130	M	5/26/2015	11:48	A052615B 0
	Lead	0.0018	0.0020	90		70 - 130	M	5/26/2015	11:48	A052615B 0
	Manganese	0.0046	0.0050	92		70 - 130	M	5/26/2015	11:48	A052615B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/26/2015	11:48	A052615B 0
	Nickel	0.0050	0.0050	100		70 - 130	M	5/26/2015	11:48	A052615B 0
	Selenium	0.0047	0.0050	94		70 - 130	M	5/26/2015	11:48	A052615B 0
	Silver	0.0018	0.0020	90		70 - 130	M	5/26/2015	11:48	A052615B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	5/26/2015	11:48	A052615B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	5/26/2015	11:48	A052615B 0

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0998	0.1000	100		90 - 110	M	5/26/2015	12:29	A052615B 0
	Arsenic	0.1007	0.1000	101		90 - 110	M	5/26/2015	12:29	A052615B 0
	Barium	0.0983	0.1000	98		90 - 110	M	5/26/2015	12:29	A052615B 0
	Beryllium	0.0975	0.1000	98		90 - 110	M	5/26/2015	12:29	A052615B 0
	Cadmium	0.0960	0.1000	96		90 - 110	M	5/26/2015	12:29	A052615B 0
	Chromium	0.1005	0.1000	100		90 - 110	M	5/26/2015	12:29	A052615B 0
	Cobalt	0.1005	0.1000	100		90 - 110	M	5/26/2015	12:29	A052615B 0
	Copper	0.0970	0.1000	97		90 - 110	M	5/26/2015	12:29	A052615B 0
	Lead	0.0993	0.1000	99		90 - 110	M	5/26/2015	12:29	A052615B 0
	Manganese	0.1008	0.1000	101		90 - 110	M	5/26/2015	12:29	A052615B 0
	Molybdenum	0.0911	0.1000	91		90 - 110	M	5/26/2015	12:29	A052615B 0
	Nickel	0.0990	0.1000	99		90 - 110	M	5/26/2015	12:29	A052615B 0
	Selenium	0.0969	0.1000	97		90 - 110	M	5/26/2015	12:29	A052615B 0
	Silver	0.0986	0.1000	99		90 - 110	M	5/26/2015	12:29	A052615B 0
	Thallium	0.0969	0.1000	97		90 - 110	M	5/26/2015	12:29	A052615B 0
	Vanadium	0.1011	0.1000	101		90 - 110	M	5/26/2015	12:29	A052615B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/26/2015	12:36	A052615B 0
	Arsenic	0.0028	0.0030	93		70 - 130	M	5/26/2015	12:36	A052615B 0
	Barium	0.0050	0.0050	100		70 - 130	M	5/26/2015	12:36	A052615B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/26/2015	12:36	A052615B 0
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/26/2015	12:36	A052615B 0
	Chromium	0.0017	0.0020	85		70 - 130	M	5/26/2015	12:36	A052615B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	5/26/2015	12:36	A052615B 0
	Copper	0.0044	0.0050	88		70 - 130	M	5/26/2015	12:36	A052615B 0
	Lead	0.0018	0.0020	90		70 - 130	M	5/26/2015	12:36	A052615B 0
	Manganese	0.0046	0.0050	92		70 - 130	M	5/26/2015	12:36	A052615B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	5/26/2015	12:36	A052615B 0
	Nickel	0.0049	0.0050	98		70 - 130	M	5/26/2015	12:36	A052615B 0
	Selenium	0.0052	0.0050	104		70 - 130	M	5/26/2015	12:36	A052615B 0
	Silver	0.0018	0.0020	90		70 - 130	M	5/26/2015	12:36	A052615B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	5/26/2015	12:36	A052615B 0
	Vanadium	0.0018	0.0020	90		70 - 130	M	5/26/2015	12:36	A052615B 0

6020 3015
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0996	0.1000	100		90 - 110	M	5/26/2015	13:39	A052615B 0
	Arsenic	0.0994	0.1000	99		90 - 110	M	5/26/2015	13:39	A052615B 0
	Barium	0.0978	0.1000	98		90 - 110	M	5/26/2015	13:39	A052615B 0
	Beryllium	0.0961	0.1000	96		90 - 110	M	5/26/2015	13:39	A052615B 0
	Cadmium	0.0959	0.1000	96		90 - 110	M	5/26/2015	13:39	A052615B 0
	Chromium	0.1011	0.1000	101		90 - 110	M	5/26/2015	13:39	A052615B 0
	Cobalt	0.1007	0.1000	101		90 - 110	M	5/26/2015	13:39	A052615B 0
	Copper	0.1007	0.1000	101		90 - 110	M	5/26/2015	13:39	A052615B 0
	Lead	0.0993	0.1000	99		90 - 110	M	5/26/2015	13:39	A052615B 0
	Manganese	0.1005	0.1000	100		90 - 110	M	5/26/2015	13:39	A052615B 0
	Molybdenum	0.0903	0.1000	90		90 - 110	M	5/26/2015	13:39	A052615B 0
	Nickel	0.0990	0.1000	99		90 - 110	M	5/26/2015	13:39	A052615B 0
	Selenium	0.0990	0.1000	99		90 - 110	M	5/26/2015	13:39	A052615B 0
	Silver	0.0980	0.1000	98		90 - 110	M	5/26/2015	13:39	A052615B 0
	Thallium	0.0959	0.1000	96		90 - 110	M	5/26/2015	13:39	A052615B 0
	Vanadium	0.1014	0.1000	101		90 - 110	M	5/26/2015	13:39	A052615B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/26/2015	13:46	A052615B 0
	Arsenic	0.0027	0.0030	90		70 - 130	M	5/26/2015	13:46	A052615B 0
	Barium	0.0052	0.0050	104		70 - 130	M	5/26/2015	13:46	A052615B 0
	Beryllium	0.0010	0.0010	100		70 - 130	M	5/26/2015	13:46	A052615B 0
	Cadmium	0.0010	0.0010	100		70 - 130	M	5/26/2015	13:46	A052615B 0
	Chromium	0.0017	0.0020	85		70 - 130	M	5/26/2015	13:46	A052615B 0
	Cobalt	0.0044	0.0050	88		70 - 130	M	5/26/2015	13:46	A052615B 0
	Copper	0.0043	0.0050	86		70 - 130	M	5/26/2015	13:46	A052615B 0
	Lead	0.0018	0.0020	90		70 - 130	M	5/26/2015	13:46	A052615B 0
	Manganese	0.0046	0.0050	92		70 - 130	M	5/26/2015	13:46	A052615B 0
	Molybdenum	0.0018	0.0020	90		70 - 130	M	5/26/2015	13:46	A052615B 0
	Nickel	0.0050	0.0050	100		70 - 130	M	5/26/2015	13:46	A052615B 0
	Selenium	0.0048	0.0050	96		70 - 130	M	5/26/2015	13:46	A052615B 0
	Silver	0.0018	0.0020	90		70 - 130	M	5/26/2015	13:46	A052615B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	5/26/2015	13:46	A052615B 0
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/26/2015	13:46	A052615B 0

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0987	0.1000	99		90 - 110	M	5/26/2015	14:24	A052615B 0
	Arsenic	0.0979	0.1000	98		90 - 110	M	5/26/2015	14:24	A052615B 0
	Barium	0.1004	0.1000	100		90 - 110	M	5/26/2015	14:24	A052615B 0
	Beryllium	0.1041	0.1000	104		90 - 110	M	5/26/2015	14:24	A052615B 0
	Cadmium	0.0960	0.1000	96		90 - 110	M	5/26/2015	14:24	A052615B 0
	Chromium	0.1015	0.1000	102		90 - 110	M	5/26/2015	14:24	A052615B 0
	Cobalt	0.0990	0.1000	99		90 - 110	M	5/26/2015	14:24	A052615B 0
	Copper	0.0982	0.1000	98		90 - 110	M	5/26/2015	14:24	A052615B 0
	Lead	0.0988	0.1000	99		90 - 110	M	5/26/2015	14:24	A052615B 0
	Manganese	0.0999	0.1000	100		90 - 110	M	5/26/2015	14:24	A052615B 0
	Molybdenum	0.0927	0.1000	93		90 - 110	M	5/26/2015	14:24	A052615B 0
	Nickel	0.0967	0.1000	97		90 - 110	M	5/26/2015	14:24	A052615B 0
	Selenium	0.0962	0.1000	96		90 - 110	M	5/26/2015	14:24	A052615B 0
	Silver	0.0991	0.1000	99		90 - 110	M	5/26/2015	14:24	A052615B 0
	Thallium	0.0968	0.1000	97		90 - 110	M	5/26/2015	14:24	A052615B 0
	Vanadium	0.1027	0.1000	103		90 - 110	M	5/26/2015	14:24	A052615B 0
LLCCV										
	Antimony	0.0018	0.0020	90		70 - 130	M	5/26/2015	14:33	A052615B 0
	Arsenic	0.0029	0.0030	97		70 - 130	M	5/26/2015	14:33	A052615B 0
	Barium	0.0051	0.0050	102		70 - 130	M	5/26/2015	14:33	A052615B 0
	Beryllium	0.0011	0.0010	110		70 - 130	M	5/26/2015	14:33	A052615B 0
	Cadmium	0.0011	0.0010	110		70 - 130	M	5/26/2015	14:33	A052615B 0
	Chromium	0.0018	0.0020	90		70 - 130	M	5/26/2015	14:33	A052615B 0
	Cobalt	0.0045	0.0050	90		70 - 130	M	5/26/2015	14:33	A052615B 0
	Copper	0.0043	0.0050	86		70 - 130	M	5/26/2015	14:33	A052615B 0
	Lead	0.0018	0.0020	90		70 - 130	M	5/26/2015	14:33	A052615B 0
	Manganese	0.0046	0.0050	92		70 - 130	M	5/26/2015	14:33	A052615B 0
	Molybdenum	0.0019	0.0020	95		70 - 130	M	5/26/2015	14:33	A052615B 0
	Nickel	0.0048	0.0050	96		70 - 130	M	5/26/2015	14:33	A052615B 0
	Selenium	0.0047	0.0050	94		70 - 130	M	5/26/2015	14:33	A052615B 0
	Silver	0.0018	0.0020	90		70 - 130	M	5/26/2015	14:33	A052615B 0
	Thallium	0.0008	0.0010	80		70 - 130	M	5/26/2015	14:33	A052615B 0
	Vanadium	0.0017	0.0020	85		70 - 130	M	5/26/2015	14:33	A052615B 0

6020 3015

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/26/2015	10:25	A052615B 095
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/26/2015	10:25	A052615B 095
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/26/2015	10:25	A052615B 095
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	10:25	A052615B 095
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/26/2015	10:25	A052615B 095
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	10:25	A052615B 095
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/26/2015	11:44	A052615B 095
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/26/2015	11:44	A052615B 095
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/26/2015	11:44	A052615B 095
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	11:44	A052615B 095
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/26/2015	11:44	A052615B 095
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	11:44	A052615B 095

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/26/2015	12:32	A052615B 095
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/26/2015	12:32	A052615B 095
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/26/2015	12:32	A052615B 095
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	12:32	A052615B 095
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/26/2015	12:32	A052615B 095
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	12:32	A052615B 095

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/26/2015	13:43	A052615B 095
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/26/2015	13:43	A052615B 095
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/26/2015	13:43	A052615B 095
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	13:43	A052615B 095
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/26/2015	13:43	A052615B 095
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	13:43	A052615B 095
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	5/26/2015	14:28	A052615B 095
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	5/26/2015	14:28	A052615B 095
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	5/26/2015	14:28	A052615B 095
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	5/26/2015	14:28	A052615B 095
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	5/26/2015	14:28	A052615B 095
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	5/26/2015	14:28	A052615B 095

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2182262			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	5/26/2015	11:03	A052615B 0956
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	5/26/2015	11:03	A052615B 0956
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	5/26/2015	11:03	A052615B 0956
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	5/26/2015	11:03	A052615B 0956
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	5/26/2015	11:03	A052615B 0956
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	5/26/2015	11:03	A052615B 0956
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	5/26/2015	11:03	A052615B 0956
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	5/26/2015	11:03	A052615B 0956
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	5/26/2015	11:03	A052615B 0956
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	5/26/2015	11:03	A052615B 0956
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	5/26/2015	11:03	A052615B 0956

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	5/26/2015	10:34	A052615B 09
	Arsenic	0.0003				-0.00300 - -0.00300	5/26/2015	10:34	A052615B 09
	Barium	0.0004				-0.01000 - -0.01000	5/26/2015	10:34	A052615B 09
	Beryllium	0.00002				-0.001000 - -0.001000	5/26/2015	10:34	A052615B 09
	Cadmium	0.0008				-0.00100 - -0.00100	5/26/2015	10:34	A052615B 09
	Chromium	0.0007				-0.00400 - -0.00400	5/26/2015	10:34	A052615B 09
	Cobalt	0.0006				-0.00600 - -0.00600	5/26/2015	10:34	A052615B 09
	Copper	0.0018				-0.00500 - -0.00500	5/26/2015	10:34	A052615B 09
	Lead	0.0001				-0.00200 - -0.00200	5/26/2015	10:34	A052615B 09
	Manganese	0.0012				-0.01000 - -0.01000	5/26/2015	10:34	A052615B 09
	Molybdenum	2.2413	2.00000	112		80 - 120%	5/26/2015	10:34	A052615B 09
	Nickel	0.0009				-0.00500 - -0.00500	5/26/2015	10:34	A052615B 09
	Selenium	0.0000				-0.00500 - -0.00500	5/26/2015	10:34	A052615B 09
	Silver	0.0004				-0.00200 - -0.00200	5/26/2015	10:34	A052615B 09
	Thallium	0.00001				-0.001000 - -0.001000	5/26/2015	10:34	A052615B 09
	Vanadium	0.0001				-0.00200 - -0.00200	5/26/2015	10:34	A052615B 09
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	5/26/2015	10:38	A052615B 09
	Arsenic	0.0210	0.02000	105		80 - 120%	5/26/2015	10:38	A052615B 09
	Barium	0.0003				-0.00500 - -0.00500	5/26/2015	10:38	A052615B 09
	Beryllium	0.00002				-0.001000 - -0.001000	5/26/2015	10:38	A052615B 09
	Cadmium	0.0097	0.01000	97		80 - 120%	5/26/2015	10:38	A052615B 09
	Chromium	0.0182	0.02000	91		80 - 120%	5/26/2015	10:38	A052615B 09
	Cobalt	0.0338	0.04000	84		80 - 120%	5/26/2015	10:38	A052615B 09
	Copper	0.0182	0.02000	91		80 - 120%	5/26/2015	10:38	A052615B 09
	Lead	0.0002				-0.00200 - -0.00200	5/26/2015	10:38	A052615B 09
	Manganese	0.0189	0.02000	94		80 - 120%	5/26/2015	10:38	A052615B 09
	Molybdenum	2.1149	2.00000	106		80 - 120%	5/26/2015	10:38	A052615B 09
	Nickel	0.0366	0.04000	92		80 - 120%	5/26/2015	10:38	A052615B 09
	Selenium	0.0198	0.02000	99		80 - 120%	5/26/2015	10:38	A052615B 09
	Silver	0.0174	0.02000	87		80 - 120%	5/26/2015	10:38	A052615B 09
	Thallium	0.00001				-0.001000 - -0.001000	5/26/2015	10:38	A052615B 09
	Vanadium	0.0409	0.04000	102		80 - 120%	5/26/2015	10:38	A052615B 09

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008 **Client ID:** MRC-MW-DUP08-051815S **LIMS ID:** 2182268

Percent Solids for Sample: 0.00 **Spiked ID:** 2071807008S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.215		0.003	U	0.222	97		M
Barium	mg/L	75 - 125	2.536		0.046		2.222	112		M
Beryllium	mg/L	75 - 125	0.20557		0.00100	U	0.22222	93		M
Cadmium	mg/L	75 - 125	0.239		0.000		0.222	108		M
Chromium	mg/L	75 - 125	0.230		0.007		0.222	100		M
Cobalt	mg/L	75 - 125	0.220		0.006	U	0.222	99		M
Copper	mg/L	75 - 125	0.216		0.002		0.222	96		M
Lead	mg/L	75 - 125	0.247		0.002	U	0.222	111		M
Manganese	mg/L	75 - 125	0.262		0.037		0.222	101		M
Molybdenum	mg/L	75 - 125	0.239		0.002	U	0.222	108		M
Nickel	mg/L	75 - 125	0.214		0.002		0.222	95		M
Selenium	mg/L	75 - 125	0.200		0.006	U	0.222	90		M
Silver	mg/L	75 - 125	0.114		0.002	U	0.111	103		M
Thallium	mg/L	75 - 125	0.2258		0.0010	U	0.2222	102		M
Vanadium	mg/L	75 - 125	0.227		0.001		0.222	102		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008 **Client ID:** MRC-MW-DUP08-051815SD **LIMS ID:** 2182269

Percent Solids for Sample: 0.00 **Spiked ID:** 2071807008SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.209		0.003	U	0.222	94		M
Barium	mg/L	75 - 125	2.480		0.046		2.222	110		M
Beryllium	mg/L	75 - 125	0.19993		0.00100	U	0.22222	90		M
Cadmium	mg/L	75 - 125	0.235		0.000		0.222	106		M
Chromium	mg/L	75 - 125	0.225		0.007		0.222	98		M
Cobalt	mg/L	75 - 125	0.217		0.006	U	0.222	98		M
Copper	mg/L	75 - 125	0.212		0.002		0.222	95		M
Lead	mg/L	75 - 125	0.241		0.002	U	0.222	109		M
Manganese	mg/L	75 - 125	0.259		0.037		0.222	100		M
Molybdenum	mg/L	75 - 125	0.233		0.002	U	0.222	105		M
Nickel	mg/L	75 - 125	0.209		0.002		0.222	93		M
Selenium	mg/L	75 - 125	0.196		0.006	U	0.222	88		M
Silver	mg/L	75 - 125	0.112		0.002	U	0.111	101		M
Thallium	mg/L	75 - 125	0.2173		0.0010	U	0.2222	98		M
Vanadium	mg/L	75 - 125	0.223		0.001		0.222	100		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008S **Client ID:** MRC-MW-DUP08-051815SD **LIMS ID:** 2182269

Percent Solids for Sample: 0.00 **Duplicate ID:** 2071807008SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.22		0		M
Arsenic	mg/L	0 - 20	0.215		0.209		3		M
Barium	mg/L	0 - 20	2.536		2.480		2		M
Beryllium	mg/L	0 - 20	0.20557		0.19993		3		M
Cadmium	mg/L	0 - 20	0.239		0.235		2		M
Chromium	mg/L	0 - 20	0.230		0.225		2		M
Cobalt	mg/L	0 - 20	0.220		0.217		1		M
Copper	mg/L	0 - 20	0.216		0.212		2		M
Lead	mg/L	0 - 20	0.247		0.241		2		M
Manganese	mg/L	0 - 20	0.262		0.259		1		M
Molybdenum	mg/L	0 - 20	0.239		0.233		3		M
Nickel	mg/L	0 - 20	0.214		0.209		2		M
Selenium	mg/L	0 - 20	0.200		0.196		2		M
Silver	mg/L	0 - 20	0.114		0.112		2		M
Thallium	mg/L	0 - 20	0.2258		0.2173		4		M
Vanadium	mg/L	0 - 20	0.227		0.223		2		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2182263									
	Antimony	mg/L	0.2220	0.2193		99		80 - 120	M
	Arsenic	mg/L	0.2220	0.2133		96		80 - 120	M
	Barium	mg/L	2.2220	2.4777		112		80 - 120	M
	Beryllium	mg/L	0.2220	0.2052		92		80 - 120	M
	Cadmium	mg/L	0.2220	0.2369		107		80 - 120	M
	Chromium	mg/L	0.2220	0.2232		101		80 - 120	M
	Cobalt	mg/L	0.2220	0.2243		101		80 - 120	M
	Copper	mg/L	0.2220	0.2209		100		80 - 120	M
	Lead	mg/L	0.2220	0.2229		100		80 - 120	M
	Manganese	mg/L	0.2220	0.2261		102		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2291		103		80 - 120	M
	Nickel	mg/L	0.2220	0.2198		99		80 - 120	M
	Selenium	mg/L	0.2220	0.2076		94		80 - 120	M
	Silver	mg/L	0.1110	0.1160		105		80 - 120	M
	Thallium	mg/L	0.2220	0.2029		91		80 - 120	M
	Vanadium	mg/L	0.2220	0.2220		100		80 - 120	M

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SERIAL DILUTION SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Level:** LOW **Client ID:** MRC-MW-111B-051815L

Sample ID: **2071807003** **Serial Dilution ID:** **2071807003L**

Analyte	Initial Result mg/L	C	Serial Result mg/L	C	% Difference	Qual	Acceptance Limits	M
Antimony	0.0007	U	0.0007	U			10.00 %	M
Arsenic	0.0034		0.0010	U	100.0		10.00 %	M
Barium	0.0812		0.0815		0		10.00 %	M
Beryllium	0.000414		0.000300	U	100.0		10.00 %	M
Cadmium	0.0004	U	0.0004	U			10.00 %	M
Chromium	0.0007	U	0.0007	U			10.00 %	M
Cobalt	0.0566		0.0511		10		10.00 %	M
Copper	0.0019	U	0.0019	U			10.00 %	M
Lead	0.0007	U	0.0007	U			10.00 %	M
Manganese	1.1099		1.1217		1		10.00 %	M
Molybdenum	0.0007	U	0.0007	U			10.00 %	M
Nickel	0.0994		0.0998		0		10.00 %	M
Selenium	0.0019	U	0.0019	U			10.00 %	M
Silver	0.0007	U	0.0007	U			10.00 %	M
Thallium	0.0003	U	0.0003	U			10.00 %	M
Vanadium	0.0007	U	0.0007	U			10.00 %	M

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0956												
BLK	BLK	0959	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	1003	101		101		100		100		101		101	
STANDARD 2	STANDARD 2	1007	97		97		97		97		101		98	
STANDARD 3	STANDARD 3	1011	101		100		101		100		103		100	
STANDARD 4	STANDARD 4	1014	102		99		100		100		105		101	
STANDARD 5	STANDARD 5	1018	101		98		99		100		102		99	
ICV	ICV	1022	101		99		100		99		103		100	
ICB1	ICB	1025	101		99		99		99		102		99	
LLICV	LLICV	1030	102		100		100		101		102		100	
ICS-A1	ICSA	1034	89		97		92		98		102		98	
ICS-AB1	ICSAB	1038	93		101		96		101		106		101	
CHECK	ZZZZZZ	1056												
CHECK	ZZZZZZ	1059												
2182262	MB for HBN 74888	1103	106		117		96		92		92		95	
2182263	LCS for HBN 7488	1107	104		121		96		93		95		122	
2182264	ZZZZZZ	1110												
2182265	ZZZZZZ	1114												
2182266	ZZZZZZ	1118												
2182267	ZZZZZZ	1122												
2182264	ZZZZZZ	1125												
2182309	ZZZZZZ	1129												
2182310	ZZZZZZ	1133												
2179317	ZZZZZZ	1136												
CCV1	CCV	1140	104		101		104		100		100		101	
CCB1	CCB	1144	101		98		100		97		96		98	
LLCCV	LLCCV	1148	102		98		100		98		97		100	
2069970002	ZZZZZZ	1151												
2069970004	ZZZZZZ	1155												
2069970006	ZZZZZZ	1159												
2069970008	ZZZZZZ	1203												
2069970010	ZZZZZZ	1206												
2069970012	ZZZZZZ	1210												
2182311	ZZZZZZ	1214												
2182312	ZZZZZZ	1218												
2071285026	ZZZZZZ	1221												
2182262	ZZZZZZ	1225												
CCV2	CCV	1229	101		97		100		98		98		100	
CCB2	CCB	1232	99		95		98		95		95		98	
LLCCV	LLCCV	1236	99		94		98		96		98		99	
2071807003	MRC-MW-111B-0518	1302	95		110		94		91		91		95	
2071807003L	MRC-MW-111B-0518	1306	95		101		96		92		91		97	
2071807004	MRC-MW-109A-0518	1309	91		107		93		94		93		98	
2071807006	MRC-MW-98A-05181	1313	94		108		94		94		95		98	

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2071807007	MRC-MW-98B-05181	1317	93		107		94		94		94		98	
2071807008	MRC-MW-DUP08-051	1320	93		110		96		95		93		99	
2071807008S	MRC-MW-DUP08-051	1324	93		108		94		95		94		98	
2071807008S	MRC-MW-DUP08-051	1328	94		109		95		95		95		99	
2071716006	ZZZZZZ	1332												
2069970004	ZZZZZZ	1335												
CCV3	CCV	1339	101		96		99		98		100		99	
CCB3	CCB	1343	103		98		102		101		85		94	
LLCCV	LLCCV	1346	99		93		97		96		100		97	
2072811001	ZZZZZZ	1350												
2072811002	ZZZZZZ	1354												
2072811003	ZZZZZZ	1358												
2072811004	ZZZZZZ	1402												
CHECK	ZZZZZZ	1409												
CHECK	ZZZZZZ	1415												
2182263	LCS for HBN 7488	1421	118		119		99		103		106		100	
CCV4	CCV	1424	100		98		100		105		112		100	
CCB4	CCB	1428	101		97		99		103		108		98	
LLCCV	LLCCV	1433	100		98		100		104		109		99	
2182517	ZZZZZZ	1437												
2182518	ZZZZZZ	1440												
2072699001	ZZZZZZ	1444												
2072699002	ZZZZZZ	1525												
2072699003	ZZZZZZ	1529												
2072700001	ZZZZZZ	1533												
2072700002	ZZZZZZ	1537												
2072700003	ZZZZZZ	1541												
2072701001	ZZZZZZ	1544												
2072701002	ZZZZZZ	1548												
CCV5	ZZZZZZ	1552												
CCB5	ZZZZZZ	1556												
LLCCV	ZZZZZZ	1559												
2072701003	ZZZZZZ	1603												
2072697001	ZZZZZZ	1607												
2072698009	ZZZZZZ	1611												
2072698010	ZZZZZZ	1615												
2072703001	ZZZZZZ	1618												
2072704001	ZZZZZZ	1622												
2182519	ZZZZZZ	1626												
2182520	ZZZZZZ	1630												
2072704001P	ZZZZZZ	1634												
CCV6	ZZZZZZ	1638												
CCB6	ZZZZZZ	1641												
LLCCV	ZZZZZZ	1645												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2182518	ZZZZZZ	2245												
CCV7	ZZZZZZ	2249												
CCB7	ZZZZZZ	2252												
LLCCV	ZZZZZZ	2256												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0956												
BLK	0959	100											
STANDARD 1	1003	101											
STANDARD 2	1007	97											
STANDARD 3	1011	101											
STANDARD 4	1014	101											
STANDARD 5	1018	101											
ICV	1022	101											
ICB	1025	100											
LLICV	1030	101											
ICSA	1034	98											
ICSAB	1038	101											
ZZZZZZ	1056												
ZZZZZZ	1059												
MB for HBN 74888	1103	98											
LCS for HBN 7488	1107	99											
ZZZZZZ	1110												
ZZZZZZ	1114												
ZZZZZZ	1118												
ZZZZZZ	1122												
ZZZZZZ	1125												
ZZZZZZ	1129												
ZZZZZZ	1133												
ZZZZZZ	1136												
CCV	1140	104											
CCB	1144	101											
LLCCV	1148	101											
ZZZZZZ	1151												
ZZZZZZ	1155												
ZZZZZZ	1159												
ZZZZZZ	1203												
ZZZZZZ	1206												
ZZZZZZ	1210												
ZZZZZZ	1214												
ZZZZZZ	1218												
ZZZZZZ	1221												
ZZZZZZ	1225												
CCV	1229	101											
CCB	1232	99											
LLCCV	1236	99											
MRC-MW-111B-0518	1302	97											
MRC-MW-111B-0518	1306	99											
MRC-MW-109A-0518	1309	97											
MRC-MW-98A-05181	1313	99											
MRC-MW-98B-05181	1317	99											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
MRC-MW-DUP08-051	1320	100											
MRC-MW-DUP08-051	1324	99											
MRC-MW-DUP08-051	1328	100											
ZZZZZZ	1332												
ZZZZZZ	1335												
CCV	1339	101											
CCB	1343	103											
LLCCV	1346	98											
ZZZZZZ	1350												
ZZZZZZ	1354												
ZZZZZZ	1358												
ZZZZZZ	1402												
ZZZZZZ	1409												
ZZZZZZ	1415												
LCS for HBN 7488	1421	100											
CCV	1424	99											
CCB	1428	98											
LLCCV	1433	98											
ZZZZZZ	1437												
ZZZZZZ	1440												
ZZZZZZ	1444												
ZZZZZZ	1525												
ZZZZZZ	1529												
ZZZZZZ	1533												
ZZZZZZ	1537												
ZZZZZZ	1541												
ZZZZZZ	1544												
ZZZZZZ	1548												
ZZZZZZ	1552												
ZZZZZZ	1556												
ZZZZZZ	1559												
ZZZZZZ	1603												
ZZZZZZ	1607												
ZZZZZZ	1611												
ZZZZZZ	1615												
ZZZZZZ	1618												
ZZZZZZ	1622												
ZZZZZZ	1626												
ZZZZZZ	1630												
ZZZZZZ	1634												
ZZZZZZ	1638												
ZZZZZZ	1641												
ZZZZZZ	1645												
ZZZZZZ	2245												
ZZZZZZ	2249												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-035

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 05/26/2015 End Date: 05/26/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	2252												
ZZZZZZ	2256												

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	74888						
2182262	MB for HBN 74888 [MDIG/50977	MB	QC-WAT	5/24/15	45.0	50.0	
2182263	LCS for HBN 74888 [MDIG/50977	LCS	QC-WAT	5/24/15	45.0	50.0	
2071807003	MRC-MW-111B-051815	SAM	WATER	5/24/15	45.0	50.0	
2071807004	MRC-MW-109A-051815	SAM	WATER	5/24/15	45.0	50.0	
2071807006	MRC-MW-98A-051815	SAM	WATER	5/24/15	45.0	50.0	
2071807007	MRC-MW-98B-051815	SAM	WATER	5/24/15	45.0	50.0	
2071807008	MRC-MW-DUP08-051815	SAM	WATER	5/24/15	45.0	50.0	
2071807008S	MRC-MW-DUP08-051815S	MS	WATER	5/24/15	45.0	50.0	
2071807008SD	MRC-MW-DUP08-051815SD	MSD	WATER	5/24/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A052615B 095

Start Date: 5/26/2015 End Date: 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0956																										
BLK	1.00	0959			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	1003			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	1007			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	1011			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	1014			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	1018			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	1022			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	1025			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	1030			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	1034			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	1038			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1056																										
ZZZZZZ	1.00	1059																										
2182262	1.00	1103			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2182263	1.00	1107			X		X	X	X		X	X	X		X		X		X			X		X	X			*
ZZZZZZ	1.00	1110																										
ZZZZZZ	1.00	1114																										
ZZZZZZ	1.00	1118																										
ZZZZZZ	1.00	1122																										
ZZZZZZ	1.00	1125																										
ZZZZZZ	1.00	1129																										
ZZZZZZ	1.00	1133																										
ZZZZZZ	1.00	1136																										
CCV1	1.00	1140			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB1	1.00	1144			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1148			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1151																										
ZZZZZZ	1.00	1155																										
ZZZZZZ	1.00	1159																										
ZZZZZZ	1.00	1203																										
ZZZZZZ	1.00	1206																										
ZZZZZZ	1.00	1210																										
ZZZZZZ	1.00	1214																										
ZZZZZZ	1.00	1218																										
ZZZZZZ	1.00	1221																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A052615B 095

Start Date: 5/26/2015 End Date: 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1225																										
CCV2	1.00	1229			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB2	1.00	1232			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1236			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807003	1.00	1302			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807003L	5.00	1306			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807004	1.00	1309			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807006	1.00	1313			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807007	1.00	1317			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807008	1.00	1320			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807008S	1.00	1324			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2071807008SD	1.00	1328			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1332																										
ZZZZZZ	100.00	1335																										
CCV3	1.00	1339			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	1343			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1346			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1350																										
ZZZZZZ	1.00	1354																										
ZZZZZZ	1.00	1358																										
ZZZZZZ	1.00	1402																										
ZZZZZZ	1.00	1409																										
ZZZZZZ	1.00	1415																										
2182263	1.00	1421				X															X							
CCV4	1.00	1424			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	1428			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1433			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	1437																										
ZZZZZZ	5.00	1440																										
ZZZZZZ	5.00	1444																										
ZZZZZZ	5.00	1525																										
ZZZZZZ	5.00	1529																										
ZZZZZZ	5.00	1533																										
ZZZZZZ	5.00	1537																										
ZZZZZZ	5.00	1541																										
ZZZZZZ	5.00	1544																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A052615B 095

Start Date: 5/26/2015 End Date: 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1548																								
ZZZZZZ	1.00	1552																								
ZZZZZZ	1.00	1556																								
ZZZZZZ	1.00	1559																								
ZZZZZZ	5.00	1603																								
ZZZZZZ	5.00	1607																								
ZZZZZZ	5.00	1611																								
ZZZZZZ	5.00	1615																								
ZZZZZZ	5.00	1618																								
ZZZZZZ	5.00	1622																								
ZZZZZZ	5.00	1626																								
ZZZZZZ	5.00	1630																								
ZZZZZZ	5.00	1634																								
ZZZZZZ	1.00	1638																								
ZZZZZZ	1.00	1641																								
ZZZZZZ	1.00	1645																								
ZZZZZZ	5.00	2245																								
ZZZZZZ	1.00	2249																								
ZZZZZZ	1.00	2252																								
ZZZZZZ	1.00	2256																								

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM035|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-035

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A052615B 095

Start Date: 5/26/2015 **End Date:** 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	09:56																									
BLK	1.00	09:59					X																				
STANDARD 1	1.00	10:03					X																				
STANDARD 2	1.00	10:07					X																				
STANDARD 3	1.00	10:11					X																				
STANDARD 4	1.00	10:14					X																				
STANDARD 5	1.00	10:18					X																				
ICV	1.00	10:22					X																				
ICB1	1.00	10:25					X																				
LLICV	1.00	10:30					X																				
ICS-A1	1.00	10:34					X																				
ICS-AB1	1.00	10:38					X																				
ZZZZZZ	1.00	10:56																									
ZZZZZZ	1.00	10:59																									
2182262	1.00	11:03					X																				
2182263	1.00	11:07					X																				
ZZZZZZ	1.00	11:10																									
ZZZZZZ	1.00	11:14																									
ZZZZZZ	1.00	11:18																									
ZZZZZZ	1.00	11:22																									
ZZZZZZ	1.00	11:25																									
ZZZZZZ	1.00	11:29																									
ZZZZZZ	1.00	11:33																									
ZZZZZZ	1.00	11:36																									
CCV1	1.00	11:40					X																				
CCB1	1.00	11:44					X																				
LLCCV	1.00	11:48					X																				
ZZZZZZ	1.00	11:51																									
ZZZZZZ	1.00	11:55																									
ZZZZZZ	1.00	11:59																									
ZZZZZZ	1.00	12:03																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM035|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-035

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A052615B 095

Start Date: 5/26/2015 **End Date:** 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	12:06																									
ZZZZZZ	1.00	12:10																									
ZZZZZZ	1.00	12:14																									
ZZZZZZ	1.00	12:18																									
ZZZZZZ	1.00	12:21																									
ZZZZZZ	1.00	12:25																									
CCV2	1.00	12:29					X																				
CCB2	1.00	12:32					X																				
LLCCV	1.00	12:36					X																				
2071807003	1.00	13:02					X																				
2071807003L	5.00	13:06					X																				
2071807004	1.00	13:09					X																				
2071807006	1.00	13:13					X																				
2071807007	1.00	13:17					X																				
2071807008	1.00	13:20					X																				
2071807008S	1.00	13:24					X																				
2071807008SD	1.00	13:28					X																				
ZZZZZZ	1.00	13:32																									
ZZZZZZ	100.00	13:35																									
CCV3	1.00	13:39					X																				
CCB3	1.00	13:43					X																				
LLCCV	1.00	13:46					X																				
ZZZZZZ	1.00	13:50																									
ZZZZZZ	1.00	13:54																									
ZZZZZZ	1.00	13:58																									
ZZZZZZ	1.00	14:02																									
ZZZZZZ	1.00	14:09																									
ZZZZZZ	1.00	14:15																									
2182263	1.00	14:21																									
CCV4	1.00	14:24					X																				
CCB4	1.00	14:28					X																				

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM035|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-035

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A052615B 095

Start Date: 5/26/2015 **End Date:** 5/26/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
LLCCV	1.00	14:33					X																					
ZZZZZZ	5.00	14:37																										
ZZZZZZ	5.00	14:40																										
ZZZZZZ	5.00	14:44																										
ZZZZZZ	5.00	15:25																										
ZZZZZZ	5.00	15:29																										
ZZZZZZ	5.00	15:33																										
ZZZZZZ	5.00	15:37																										
ZZZZZZ	5.00	15:41																										
ZZZZZZ	5.00	15:44																										
ZZZZZZ	5.00	15:48																										
ZZZZZZ	1.00	15:52																										
ZZZZZZ	1.00	15:56																										
ZZZZZZ	1.00	15:59																										
ZZZZZZ	5.00	16:03																										
ZZZZZZ	5.00	16:07																										
ZZZZZZ	5.00	16:11																										
ZZZZZZ	5.00	16:15																										
ZZZZZZ	5.00	16:18																										
ZZZZZZ	5.00	16:22																										
ZZZZZZ	5.00	16:26																										
ZZZZZZ	5.00	16:30																										
ZZZZZZ	5.00	16:34																										
ZZZZZZ	1.00	16:38																										
ZZZZZZ	1.00	16:41																										
ZZZZZZ	1.00	16:45																										
ZZZZZZ	5.00	22:45																										
ZZZZZZ	1.00	22:49																										
ZZZZZZ	1.00	22:52																										
ZZZZZZ	1.00	22:56																										

Total Metals by 6010C Summary Forms

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.987	1.000	99		90 - 110	P	5/22/2015	08:33	052215A 30
CCV	Iron	2.485	2.500	99		90 - 110	P	5/22/2015	08:44	052215A 30
CCV	Iron	2.563	2.500	103		90 - 110	P	5/22/2015	12:07	052215A 30
LLCCV	Iron	0.067	0.060	112		70 - 130	P	5/22/2015	12:14	052215A 30
CCV	Iron	2.520	2.500	101		90 - 110	P	5/22/2015	13:03	052215A 30
CCV	Iron	2.543	2.500	102		90 - 110	P	5/22/2015	14:32	052215A 30
CCV	Iron	2.555	2.500	102		90 - 110	P	5/22/2015	15:17	052215A 30
LLCCV	Iron	0.063	0.060	105		70 - 130	P	5/22/2015	15:24	052215A 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.060	0.060	100		70 - 130	P	5/22/2015	08:41	052215A 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/22/2015	08:37	052215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/22/2015	12:10	052215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/22/2015	13:07	052215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/22/2015	14:36	052215A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/22/2015	15:20	052215A 3015

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2181149			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	5/22/2015	12:41	052215A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	115.8	125.0	93		80 - 120%	5/22/2015	08:51	052215A 3015
ICSAB									
	Iron	114.2	125.0	91		80 - 120%	5/22/2015	08:55	052215A 3015
ICSA									
	Iron	117.2	125.0	94		80 - 120%	5/22/2015	12:18	052215A 3015
ICSAB									
	Iron	120.3	125.0	96		80 - 120%	5/22/2015	12:22	052215A 3015
ICSA									
	Iron	116.1	125.0	93		80 - 120%	5/22/2015	15:28	052215A 3015
ICSAB									
	Iron	117.2	125.0	94		80 - 120%	5/22/2015	15:32	052215A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2181150									
	Iron	mg/L	1.11	1.086		98		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	74358						
2181149	MB for HBN 74358 [MDIG/50944	MB	QC-WAT	5/21/15	45.0	50.0	
2181150	LCS for HBN 74358 [MDIG/50944	LCS	QC-WAT	5/21/15	45.0	50.0	
2071807003	MRC-MW-111B-051815	SAM	WATER	5/21/15	45.0	50.0	
2071807004	MRC-MW-109A-051815	SAM	WATER	5/21/15	45.0	50.0	
2071807006	MRC-MW-98A-051815	SAM	WATER	5/21/15	45.0	50.0	
2071807007	MRC-MW-98B-051815	SAM	WATER	5/21/15	45.0	50.0	
2071807008	MRC-MW-DUP08-051815	SAM	WATER	5/21/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052215A 3015

Start Date: 5/22/2015 End Date: 5/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0808												X													
ICAL2	1.00	0812												X													
ICAL3	1.00	0816												X													
ICAL4	1.00	0820												X													
ICAL5	1.00	0823												X													
ZZZZZZ	1.00	0829																									
ICV2	1.00	0833												X													
ICB1	1.00	0837												X													
CRDL1	1.00	0841												X													
CCV1	1.00	0844												X													
HIGH	1.00	0848												X													
ICS-A1	1.00	0851												X													
ICS-AB1	1.00	0855												X													
ZZZZZZ	1.00	0905																									
ZZZZZZ	1.00	0909																									
ZZZZZZ	5.00	0912																									
ZZZZZZ	5.00	0916																									
ZZZZZZ	5.00	0920																									
ZZZZZZ	5.00	0924																									
ZZZZZZ	5.00	0928																									
ZZZZZZ	5.00	0932																									
ZZZZZZ	5.00	0935																									
ZZZZZZ	5.00	0939																									
ZZZZZZ	1.00	0943																									
ZZZZZZ	1.00	0947																									
ZZZZZZ	5.00	0950																									
ZZZZZZ	5.00	0954																									
ZZZZZZ	5.00	0958																									
ZZZZZZ	5.00	1002																									
ZZZZZZ	5.00	1005																									
ZZZZZZ	5.00	1009																									
ZZZZZZ	5.00	1013																									
ZZZZZZ	5.00	1017																									
ZZZZZZ	5.00	1021																									
ZZZZZZ	5.00	1025																									
ZZZZZZ	1.00	1028																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052215A 3015

Start Date: 5/22/2015 End Date: 5/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1032																									
ZZZZZZ	5.00	1036																									
ZZZZZZ	5.00	1039																									
ZZZZZZ	5.00	1043																									
ZZZZZZ	5.00	1047																									
ZZZZZZ	5.00	1051																									
ZZZZZZ	5.00	1055																									
ZZZZZZ	5.00	1058																									
ZZZZZZ	5.00	1102																									
ZZZZZZ	5.00	1106																									
ZZZZZZ	5.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1117																									
ZZZZZZ	5.00	1121																									
ZZZZZZ	5.00	1128																									
ZZZZZZ	5.00	1132																									
ZZZZZZ	5.00	1136																									
ZZZZZZ	5.00	1140																									
ZZZZZZ	5.00	1143																									
ZZZZZZ	5.00	1147																									
ZZZZZZ	5.00	1151																									
ZZZZZZ	10.00	1154																									
ZZZZZZ	1.00	1203																									
CCV5	1.00	1207											X														
CCB4	1.00	1210											X														
LLCCV	1.00	1214											X														
ICS-A2	1.00	1218											X														
ICS-AB2	1.00	1222											X														
ZZZZZZ	1.00	1226																									
ZZZZZZ	1.00	1230																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1237																									
2181149	1.00	1241											X														
2181150	1.00	1245											X														
ZZZZZZ	1.00	1248																									
ZZZZZZ	1.00	1252																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052215A 3015

Start Date: 5/22/2015 End Date: 5/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1259																									
CCV6	1.00	1303												X													
CCB5	1.00	1307												X													
ZZZZZZ	1.00	1310																									
ZZZZZZ	1.00	1314																									
ZZZZZZ	1.00	1318																									
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1325																									
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1344																									
ZZZZZZ	1.00	1348																									
ZZZZZZ	1.00	1351																									
ZZZZZZ	1.00	1355																									
ZZZZZZ	1.00	1359																									
ZZZZZZ	1.00	1403																									
ZZZZZZ	1.00	1406																									
ZZZZZZ	1.00	1410																									
ZZZZZZ	1.00	1414																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	1.00	1421																									
ZZZZZZ	1.00	1425																									
ZZZZZZ	1.00	1429																									
CCV8	1.00	1432												X													
CCB7	1.00	1436												X													
ZZZZZZ	1.00	1439																									
ZZZZZZ	1.00	1443																									
2071807003	1.00	1447												X													
2071807004	1.00	1451												X													
2071807006	1.00	1454												X													
2071807007	1.00	1458												X													
2071807008	1.00	1502												X													
ZZZZZZ	1.00	1506																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 052215A 3015

Start Date: 5/22/2015 End Date: 5/22/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1513																									
CCV9	1.00	1517												X													
CCB8	1.00	1520												X													
LLCCV	1.00	1524												X													
ICS-A3	1.00	1528												X													
ICS-AB3	1.00	1532												X													
ZZZZZZ	1.00	1535																									

Total Mercury by 7470A Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	6/1/2015	12:39	060115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	6/1/2015	13:05	060115W
CCV	Mercury	0.0039	0.004	98		90 - 110	CV	6/1/2015	13:18	060115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	6/1/2015	13:31	060115W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	6/1/2015	13:45	060115W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/1/2015	12:40	060115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/1/2015	13:06	060115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/1/2015	13:19	060115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/1/2015	13:32	060115W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/1/2015	13:46	060115W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2184193			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	6/1/2015	13:10	060115W

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008 **Client ID:** MRC-MW-DUP08-051815S **LIMS ID:** 2184197

Percent Solids for Sample: 0.00 **Spiked ID:** 2071807008S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008 **Client ID:** MRC-MW-DUP08-051815SD **LIMS ID:** 2184198

Percent Solids for Sample: 0.00 **Spiked ID:** 2071807008SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0053		0.0005	U	0.0050	106.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2071807008S **Client ID:** MRC-MW-DUP08-051815SD **LIMS ID:** 2184198

Percent Solids for Sample: 0.00 **Duplicate ID:** 2071807008SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0053		0.0053		0.0		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2184194									
	Mercury	mg/L	0.0020	0.0021		105		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-035

Contract: TMM035|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	75952						
2184193	MB for HBN 75952 [MDIG/51047	MB	QC-WAT	6/1/15	25.0	25.0	
2184194	LCS for HBN 75952 [MDIG/51047	LCS	QC-WAT	6/1/15	25.0	25.0	
2071807003	MRC-MW-111B-051815	SAM	WATER	6/1/15	25.0	25.0	
2071807004	MRC-MW-109A-051815	SAM	WATER	6/1/15	25.0	25.0	
2071807006	MRC-MW-98A-051815	SAM	WATER	6/1/15	25.0	25.0	
2071807007	MRC-MW-98B-051815	SAM	WATER	6/1/15	25.0	25.0	
2071807008	MRC-MW-DUP08-051815	SAM	WATER	6/1/15	25.0	25.0	
2071807008S	MRC-MW-DUP08-051815S	MS	WATER	6/1/15	25.0	25.0	
2071807008SD	MRC-MW-DUP08-051815SD	MSD	WATER	6/1/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Cetac Hg Method: CV Run Number: 060115W

Start Date: 6/1/2015 End Date: 6/1/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1232																X								
Standard #1 (0.2ppb	1.00	1233																X								
	1.00	1234																X								
	1.00	1235																X								
	1.00	1236																X								
	1.00	1238																X								
ICV1	1.00	1239																X								
ICB1	1.00	1240																X								
ZZZZZZ	1.00	1241																								
ZZZZZZ	1.00	1242																								
ZZZZZZ	1.00	1243																								
ZZZZZZ	1.00	1244																								
ZZZZZZ	1.00	1245																								
ZZZZZZ	1.00	1246																								
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1248																								
ZZZZZZ	1.00	1249																								
ZZZZZZ	1.00	1251																								
ZZZZZZ	1.00	1252																								
ZZZZZZ	1.00	1253																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1255																								
ZZZZZZ	1.00	1256																								
ZZZZZZ	1.00	1257																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1259																								
ZZZZZZ	1.00	1300																								
ZZZZZZ	1.00	1301																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1304																								
CCV2	1.00	1305																X								
CCB2	1.00	1306																X								
ZZZZZZ	1.00	1307																								
ZZZZZZ	1.00	1308																								
ZZZZZZ	1.00	1309																								
2184193	1.00	1310																X								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM035|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-035

Instrument ID Number: Cetac Hg Method: CV Run Number: 060115W

Start Date: 6/1/2015 End Date: 6/1/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2184194	1.00	1311																X								
ZZZZZZ	1.00	1312																								
ZZZZZZ	1.00	1313																								
ZZZZZZ	1.00	1314																								
ZZZZZZ	1.00	1316																								
ZZZZZZ	1.00	1317																								
CCV3	1.00	1318																X								
CCB3	1.00	1319																X								
ZZZZZZ	1.00	1320																								
ZZZZZZ	1.00	1321																								
ZZZZZZ	1.00	1322																								
ZZZZZZ	1.00	1323																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	1.00	1327																								
ZZZZZZ	1.00	1328																								
2071807003	1.00	1329																X								
2071807004	1.00	1330																X								
CCV4	1.00	1331																X								
CCB4	1.00	1332																X								
2071807006	1.00	1333																X								
2071807007	1.00	1335																X								
2071807008	1.00	1336																X								
2071807008S	1.00	1337																X								
2071807008SD	1.00	1338																X								
ZZZZZZ	1.00	1339																								
ZZZZZZ	1.00	1340																								
ZZZZZZ	1.00	1341																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1344																								
CCV5	1.00	1345																X								
CCB5	1.00	1346																X								
ZZZZZZ	1.00	1347																								
ZZZZZZ	1.00	1348																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1350																								

Subcontracted Data

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1514147

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 448332
Analyzed: 05/26/2015 10:58
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	0.06	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 448333
Analyzed: 05/26/2015 11:17
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.96	5.00	99.3	85.3	112.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1513562001	**MS:** 448334	**MSD:** 448335
Analyzed: 05/26/2015 11:36	**Analyzed:** 05/26/2015 11:55	**Analyzed:** 05/26/2015 12:14
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	4.85	5	97.0	85.3	112.8	4.58	91.6	5.74	0.0	20.0

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1514147

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1567 (HBN: 149278)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Continuing Calibration Verification

CCV:	448328			**CCV:**	448336	
Analyzed:	05/26/2015 09:41			**Analyzed:**	05/26/2015 14:09	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	25.6	25.0	102	25.1	25.0	100

Interference Check Sample

ICSA:	448331		
Analyzed:	05/26/2015 10:38		
Units:	ug/L		
Criteria:	± 30%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	1.04	1.00	104

Limit of Detection Verification

LODV:	448330			**LODV:**	448337	
Analyzed:	05/26/2015 10:19			**Analyzed:**	05/26/2015 14:28	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.122	0.100	122	0.107	0.100	107

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	6/1/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

SAMPLE IDENTIFICATION	MRC-MW-111A-051815
COMPOUND	CARBON DISULFIDE
COMPOUND AREA	4282
INTERNAL STANDARD AMOUNT (ug)	30
DILUTION FACTOR	1
INTERNAL STANDARD AREA	773755
AVERAGE RRF	0.58004
4282 x 30 x 1 / 773755 x 0.58004	0.29 µg/L

Sample Calc - VOC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
MRC-MW-111A-051815

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-035

Matrix (soil/water): WATER Lab Sample ID: 2071807002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15052175.D

Level (low/med): Date Received: 5/19/15

% Moisture: not dec. 100.0 Date Analyzed: 5/22/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.29	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	0.20	J
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150521A.b\1505217
Lab Smp Id: 2071807002 Client Smp ID: MRC-MW-111A-051815
Inj Date : 22-MAY-2015 02:42
Operator : CJG Inst ID: ms15.i
Smp Info : 2071807002;;1;;;;;
Misc Info : ZZ VOMS 35994 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150521A.b\15-8260
Meth Date : 26-May-2015 08:50 joshua Quant Type: ISTD
Cal Date : 19-MAY-2015 19:44 Cal File: 15051956.D
Als bottle: 25
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1	Dichlorodifluoromethane	85	Compound Not Detected.						
2	Chloromethane	50	Compound Not Detected.						
3	Vinyl Chloride	62	Compound Not Detected.						
4	Bromomethane	94	Compound Not Detected.						
5	Chloroethane	64	Compound Not Detected.						
6	Pentane	41	Compound Not Detected.						
7	Trichlorofluoromethane	101	Compound Not Detected.						
8	Dichlorofluoromethane	67	Compound Not Detected.						
9	Ethyl Ether	74	Compound Not Detected.						
10	1,1-Dichloroethene	61	Compound Not Detected.						
11	Freon 113	101	Compound Not Detected.						
12	Carbon Disulfide	76	2.180	2.180	(0.558)	4282	0.28622	0.286225(a)	
13	Iodomethane	127	Compound Not Detected.						
14	Acrolein	56	Compound Not Detected.						
15	Isopropyl Alcohol	45	Compound Not Detected.						
16	3-Chloro-1-propene	41	Compound Not Detected.						
17	Methylene Chloride	84	Compound Not Detected.						
18	Acetone	58	Compound Not Detected.						
19	Methyl acetate	74	Compound Not Detected.						
20	trans-1,2-Dichloroethene	61	Compound Not Detected.						
21	Hexane	57	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	Compound Not Detected.						
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	Compound Not Detected.						
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	262361	29.0330	29.0330	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	281593	30.0079	30.0079	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	773755	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	3695	0.38020	0.380202(aH)	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.865	4.859	(0.823)	711418	28.2810	28.2810	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

Sample Calc - VOC

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-035

Instrument ID: ms15.i Calibration Date(s): 5/19/2015 5/19/2015

Heated Purge: (Y/N) N Calibration Time(s): 18:52 20:35

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15051954.D RRF005 = 15051955.D RRF020 = 15051956.D RRF050 = 15051957.D

RRF100 = 15051958.D RRF200 = 15051959.D RRF00.5 = 15051953.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	588226			L	0.000000	63.630810		0.99960
Acrolein	0.03235	0.03366		A		0.030810		5.15925
Acrylonitrile	0.08190	0.08625		A		0.080490		5.81705
Acetonitrile	806781			Q	0.000000	0.015840	0.000170	0.99301
tert-Amyl Ethylether	3745020	5364		L	0.000000	2.050170		0.99401
tert-Amyl methyl ether	0.71213	0.50937		A		0.585210		13.83360
tert-Amyl Alcohol	598109	677		L	0.000000	64.506287		0.99230
Benzene	1.24626	1.45399		A		1.284790		6.05459
Benzyl Chloride				Q	0.000000	0.101190	0.025850	0.99981
Bromobenzene	0.98820	1.08785		A		0.964880		8.08784
Bromochloromethane	0.17759	0.24372		A		0.204570		11.19128
Bromodichloromethane	0.47525	0.35865		A		0.415870		9.55819
Bromoform *	0.53976	0.49603		A		0.453860		13.20382
Bromomethane	1350144			L	0.000000	5.577270		0.99819
2-Butanone	0.03315			A		0.033340		5.89231
tert.- Butyl Alcohol	0.02067			A		0.018550		6.52528
tert-Butylbenzene	2605843	2355		L	0.000000	1.351060		0.99977
n-Butylbenzene	2743613			L	0.000000	1.284400		0.99951
sec-Butylbenzene	12284888	10498		L	0.000000	0.283470		0.99965
Carbon Disulfide	0.65830	0.62657		A		0.580040		9.46046
Carbon Tetrachloride	0.50626	0.47001		A		0.483230		3.08130
Chloroacetonitrile	278576			L	0.000000	59.085529		0.99581
Chlorobenzene *	2.38884	2.99831		A		2.513640		9.29778
1-Chlorobutane	0.25255	0.32347		A		0.263560		10.10734
Chlorodibromomethane	0.95186	0.66969		A		0.790990		13.46837
Chloroethane	0.16347			A		0.182110		14.76712
2-Chloroethylvinyl ether	50806			L	0.749740	143		0.92638
Chloroform **	4662274	24493		L	0.000000	1.586400		0.99970
1-Chlorohexane	3290797	3247		L	0.000000	0.989980		0.99825
Chloromethane *	0.33724			A		0.354300		10.86143
Chloroprene	0.43544	0.48668		A		0.420520		8.42169
3-Chloro-1-propene	1478765	4279		L	0.000000	5.003750		0.99993
o-Chlorotoluene	2.74137	2.21018		A		2.437240		12.76798
p-Chlorotoluene	2.59094	2.08496		A		2.260850		13.57354
Cyclohexane	0.44042	0.42297		A		0.428560		6.01751
1,2-Dibromo-3-Chloropropane	0.13270	0.10828		A		0.112530		13.95394

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

Sample Calc - Metals

Sample Report

MRC-MW-111B-051815
Nickel: 0.11 mg/L

Sample Table

Sample Name	2071807003
Data File Name	042SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\A052615B.b
Acq Date Time	2015-05-26T13:02:24-04:00
Sample Type	Sample
Dilution	1
Comment	48479 MO
ISTD Ref FileName	002CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass
Vial	3208

99.421 ug/L * 50 final volume/ 45 initial volume =110 ug/L / 1000 = 0.11 mg/L

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
V	51	1	No Gas	-0.062	-0.062	-119.37	-1229	0.01	1000	
Cr	52	1	No Gas	0.544	0.544	10.89	27678	0.00	1000	
Mn	55	1	No Gas	1109.928	1109.928	0.48	33173695	0.00	8000	
Co	59	1	No Gas	56.580	56.580	0.36	1363220	0.00	1000	
Ni	60	1	No Gas	99.421	99.421	1.41	483291	0.02	1000	
Cu	63	1	No Gas	0.306	0.306	0.61	9258	0.00	5000	
Sr	88	1	No Gas	50.962	50.962	1.54	2186204	0.00	1000	
Ag	107	1	No Gas	0.040	0.040	7.87	1056	0.00	1000	
Al	27	1	No Gas	23.022	23.022	1.50	416202	0.01	90000	
Sn	118	1	No Gas	0.166	0.166	17.43	3741	0.00	1000	
Ti	47	1	No Gas	0.659	0.659	18.91	1288	0.05	2000	
Zn	66	1	No Gas	74.890	74.890	0.88	225725	0.03	5000	
As	75	3	HEHe	3.398	3.398	5.54	727	0.47	1000	
As	75	1	No Gas	2.578	2.578	11.35	33380	0.01	1000	
Sb	121	1	No Gas	0.033	0.033	8.30	1210	0.00	1000	
Hg	201	1	No Gas	0.019	0.019	53.16	91	0.02	4	
Be	9	1	No Gas	0.414	0.414	11.29	1211	0.03	1000	
Pb	208	1	No Gas	0.054	0.054	5.72	4841	0.00	1000	
Se	82	1	No Gas	0.504	0.504	20.36	160	0.32	1000	
Mo	98	1	No Gas	0.029	0.029	15.68	685	0.00	3000	
Ba	137	1	No Gas	81.196	81.196	0.98	466852	0.02	1000	
Tl	205	1	No Gas	0.052	0.052	16.20	2293	0.00	1000	
U	238	1	No Gas	-0.004	-0.004	-26.52	467	0.00	1000	
Na	23	2	He	18703.428	18703.428	2.35	2319568	0.81	90000	
Mg	24	2	He	6440.546	6440.546	2.56	362360	1.78	90000	
K	39	2	He	1408.443	1408.443	3.14	44497	3.17	90000	
Se	82	3	HEHe	0.376	0.376	57.49	9	4.00	1000	
Cd	114	1	No Gas	0.002	0.002	279.07	157	0.00	1000	
Ca	44	1	No Gas	11678.596	11678.596	0.93	7708264	0.15	90000	
B	11	1	No Gas	3.889	3.889	14.38	44436	0.01	2000	
Fe	56	3	HEHe	35049.163	35049.163	2.19	95729869	0.04	90000	
Kr	84	1	No Gas	462.707	462.707	4.75	12528	3.69	100000	
Se	78	3	HEHe	0.015	0.015	550.39	3	0.44	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Sc	45	1	No Gas	4717422	1.21	5180853	91.05	70	120	
Sc	45	2	He	34197	2.61	37791	90.49	70	120	
Ge	72	1	No Gas	637841	2.15	579173	110.13	70	120	
In	115	1	No Gas	3938818	1.57	4209996	93.56	70	120	
Tb	159	1	No Gas	5566090	1.07	5717478	97.35	70	120	
Bi	209	1	No Gas	3155359	0.92	3330234	94.75	70	120	
Sc	45	3	HEHe	84710	2.01	88763	95.43	70	120	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **SEPTEMBER 11, 2015**

FROM: **J. SAMCHUCK** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/OVG/1,4-DIOXANE/TOTAL METALS/MISCELLANEOUS PARAMETERS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2078952

SAMPLES:

5/Aqueous/VOCs

MRC-MW12A-062415 MRC-MW12B-062415 MRC-MW14A-062415 MRC-MW14B-062415 TB-062415

3/Aqueous/OVG/Miscellaneous

MRC-MW12A-062415 MRC-MW12B-062415 MRC-MW14A-062415

4/Aqueous/1,4-Dioxane

MRC-MW12A-062415 MRC-MW12B-062415 MRC-MW14A-062415 MRC-MW14B-062415

4/Aqueous/Metals

MRC-MW12A-062415 MRC-MW12B-062415 MRC-MW14A-062415 MRC-MW14B-062415

Overview

The sample set for LMC-MRC, SDG 2078952 consisted of four (4) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), organic volatile gases (OVG), 1,4-dioxane, metals, perchlorate, and/or miscellaneous parameters (alkalinity, ammonia, chloride, dissolved organic carbon, nitrate, nitrite, orthophosphate, sulfate, and total dissolved solids). No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on June 24, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, and 9060A, EPA Methods 300, 350.3, 365.3, and 522, 5310B, 2320B, and 2540D, and RSK-175 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, detection limits, and field duplicate precision. Areas of concern are listed below.

Minor

- The following VOCs were detected in the trip blank at the following maximum concentrations:

Compound	Maximum Concentration (µg/L)	Action Level (µg/L)
Acetone	8.2	82
2-butanone	3.8	38

An action level of 10X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U). The trip blank was not qualified for laboratory blank contamination.

- The continuing calibration analyzed on 6/27/15 contained a % difference for 1,4-dioxane in the volatile fraction that was greater than the 20% criterion. The detected result for 1,4-dioxane in sample MRC-MW14B-062415 was qualified as estimated (J).

- Mercury was detected in the laboratory preparation blank at the following maximum concentration:

Analyte	Maximum Concentration (mg/L)	Action Level (mg/L)
Mercury	0.000107	0.000535

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Results less than the blank action level were qualified as nondetect (U).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

Non-detected results were reported to the MDL.

The continuing calibration analyzed on 6/27/15 contained several analytes with % differences greater than the 20% criterion. The analytes greater than 20% were 2-butanone, acetone, 1,2-dibromo-3-chloropropane, 2-hexanone, methyl acetate, 4-methyl-2 pentanone, and vinyl acetate. No action was required because these analytes were not reported during this analytical sequence. The analysis on this day was performed in order to quantify dilution results for trichloroethene and cis-1,2-dichloroethene.

Executive Summary

Laboratory Performance: A calibration noncompliance was noted for 1,4-dioxane in the volatile analysis of one sample. Contaminants were detected in the trip blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

Appendix A

Qualified Analytical Results

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415			MRC-MW12A-062415-DL			MRC-MW12B-062415			MRC-MW12B-062415-DL		
SDG: 2078952	LAB_ID	2078952003			2078952003			2078952004			2078952004		
FRACTION: OV	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U					1	U				
1,1,2,2-TETRACHLOROETHANE		1	U					1	U				
1,1,2-TRICHLOROETHANE		1.8						1.5					
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U					1	U				
1,1-DICHLOROETHANE		25.3						20.5					
1,1-DICHLOROETHENE		178						161					
1,2,3-TRICHLOROBENZENE		2	U					2	U				
1,2,4-TRICHLOROBENZENE		2	U					2	U				
1,2-DIBROMO-3-CHLOROPROPANE		7	U					7	U				
1,2-DIBROMOETHANE		1	U					1	U				
1,2-DICHLOROBENZENE		1	U					1	U				
1,2-DICHLOROETHANE		1	U					1	U				
1,2-DICHLOROPROPANE		1	U					1	U				
1,3-DICHLOROBENZENE		1	U					1	U				
1,4-DICHLOROBENZENE		1	U					1	U				
1,4-DIOXANE		133	J	P				105	J	P			
2-BUTANONE		10	U					10	U				
2-HEXANONE		5	U					5	U				
4-METHYL-2-PENTANONE		5	U					5	U				
ACETONE		10	U					10	U				
BENZENE		4						4					
BROMOCHLOROMETHANE		1	U					1	U				
BROMODICHLOROMETHANE		1	U					1	U				
BROMOFORM		1	U					1	U				
BROMOMETHANE		1	U					1	U				
CARBON DISULFIDE		0.38	J	P				1	U				
CARBON TETRACHLORIDE		1	U					1	U				
CHLOROBENZENE		1	U					1	U				
CHLORODIBROMOMETHANE		1	U					1	U				
CHLOROETHANE		1	U					1	U				
CHLOROFORM		1	U					1	U				
CHLOROMETHANE		1	U					1	U				
CIS-1,2-DICHLOROETHENE		100						80.4					
CIS-1,3-DICHLOROPROPENE		1	U					1	U				
CYCLOHEXANE		1	U					1	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW14A-062415			MRC-MW14B-062415			MRC-MW14B-062415-DL			TB-062415		
SDG: 2078952	LAB_ID	2078952005			2078952002			2078952002			2078952001		
FRACTION: OV	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U					1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U					1	U	
1,1,2-TRICHLOROETHANE		1	U		1.9						1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U					1	U	
1,1-DICHLOROETHANE		1.2			37.5						1	U	
1,1-DICHLOROETHENE		1.9			156						1	U	
1,2,3-TRICHLOROBENZENE		2	U		2	U					2	U	
1,2,4-TRICHLOROBENZENE		2	U		2	U					2	U	
1,2-DIBROMO-3-CHLOROPROPANE		7	U		7	U					7	U	
1,2-DIBROMOETHANE		1	U		1	U					1	U	
1,2-DICHLOROBENZENE		1	U		1	U					1	U	
1,2-DICHLOROETHANE		1	U		3.1						1	U	
1,2-DICHLOROPROPANE		1	U		1	U					1	U	
1,3-DICHLOROBENZENE		1	U		1	U					1	U	
1,4-DICHLOROBENZENE		1	U		1	U					1	U	
1,4-DIOXANE		320	U					290	J	CP	320	U	
2-BUTANONE		10	U		138						3.8	J	P
2-HEXANONE		5	U		5	U					5	U	
4-METHYL-2-PENTANONE		5	U		5	U					5	U	
ACETONE		10	U		63.2	U	B				8.2	J	P
BENZENE		1	U		25.4						1	U	
BROMOCHLOROMETHANE		1	U		1	U					1	U	
BROMODICHLOROMETHANE		1	U		1	U					1	U	
BROMOFORM		1	U		1	U					1	U	
BROMOMETHANE		1	U		1	U					1	U	
CARBON DISULFIDE		1	U		1.5						1	U	
CARBON TETRACHLORIDE		1	U		1	U					1	U	
CHLOROBENZENE		1	U		1	U					1	U	
CHLORODIBROMOMETHANE		1	U		1	U					1	U	
CHLOROETHANE		1	U		1	U					1	U	
CHLOROFORM		1	U		1	U					1	U	
CHLOROMETHANE		1	U		1	U					1	U	
CIS-1,2-DICHLOROETHENE		20.6						859			1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U					1	U	
CYCLOHEXANE		1	U		0.3	J	P				1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415			MRC-MW12A-062415-DL			MRC-MW12B-062415			MRC-MW12B-062415-DL		
SDG: 2078952	LAB_ID	2078952003			2078952003			2078952004			2078952004		
FRACTION: OV	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U					1	U				
ETHYLBENZENE		1	U					1	U				
ISOPROPYLBENZENE		1	U					1	U				
M+P-XYLENES		2	U					2	U				
METHYL ACETATE		2	U					2	U				
METHYL CYCLOHEXANE		1	U					1	U				
METHYL TERT-BUTYL ETHER		1	U					1	U				
METHYLENE CHLORIDE		1	U					1	U				
O-XYLENE		1	U					1	U				
STYRENE		1	U					1	U				
TETRACHLOROETHENE		1.1						0.86	J	P			
TOLUENE		1	U					1	U				
TRANS-1,2-DICHLOROETHENE		1	U					1	U				
TRANS-1,3-DICHLOROPROPENE		1	U					1	U				
TRICHLOROETHENE					838						777		
TRICHLOROFLUOROMETHANE		1	U					1	U				
VINYL CHLORIDE		2.8						0.56	J	P			

PROJ_NO: 06247	NSAMPLE	MRC-MW14A-062415			MRC-MW14B-062415			MRC-MW14B-062415-DL			TB-062415		
SDG: 2078952	LAB_ID	2078952005			2078952002			2078952002			2078952001		
FRACTION: OV	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		1	U		1	U					1	U	
ETHYLBENZENE		1	U		1	U					1	U	
ISOPROPYLBENZENE		1	U		0.48	J	P				1	U	
M+P-XYLENES		2	U		2	U					2	U	
METHYL ACETATE		2	U		2	U					2	U	
METHYL CYCLOHEXANE		1	U		1	U					1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U					1	U	
METHYLENE CHLORIDE		1	U		1.2						1	U	
O-XYLENE		1	U		1	U					1	U	
STYRENE		1	U		1	U					1	U	
TETRACHLOROETHENE		1	U		1	U					1	U	
TOLUENE		1	U		1	U					1	U	
TRANS-1,2-DICHLOROETHENE		4.8			1	U					1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U					1	U	
TRICHLOROETHENE		7.1	J	P	2						1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U					1	U	
VINYL CHLORIDE		0.41	J	P	2.6						1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415			MRC-MW12A-062415-DL			MRC-MW12B-062415			MRC-MW14B-062415		
SDG: 2078952	LAB_ID	2078952003			2078952003			2078952004			2078952002		
FRACTION: MISC	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		26						29			527		
AMMONIA-N		0.43						0.16			0.46		
CHLORIDE					56.1			36.6			83		
NITRATE-N					0.5	U		0.5	U		0.5	U	
NITRITE-N					0.5	U		0.5	U		0.5	U	
ORTHOPHOSPHATE		0.03						0.023			0.02		
SULFATE					123			64.1			0.85	J	P
TOTAL DISSOLVED SOLIDS		330						194			1270		
TOTAL ORGANIC CARBON		6						2.9			471		

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415			MRC-MW12B-062415			MRC-MW14A-062415			MRC-MW14B-062415		
SDG: 2078952	LAB_ID	2078952003			2078952004			2078952005			2078952002		
FRACTION: M	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
ARSENIC		0.0016	J	P	0.003	U		0.003	U		0.0099		
BARIUM		0.15			0.16			0.14			0.28		
BERYLLIUM		0.001	J	P	0.001	U		0.001	U		0.0004	J	P
CADMIUM		0.0011	U		0.0011	U		0.0011	U		0.0011	U	
CHROMIUM		0.0021	J	P	0.0022	U		0.0013	J	P	0.0038		
COBALT		0.068			0.048			0.024			0.11		
COPPER		0.0025	J	P	0.0056	U		0.0024	J	P	0.0052	J	P
IRON		62.2			52.5			26.4			215		
LEAD		0.0041			0.0022	U		0.0022	U		0.0026		
MANGANESE		3.5			3			1.8			7		
MERCURY		0.00014	U	A	8E-05	U	A	0.00022	U		0.00013	U	A
MOLYBDENUM		0.0022	U		0.0022	U		0.0022	U		0.0018	U	A
NICKEL		0.12			0.09			0.024			0.16		
SELENIUM		0.0056	U		0.0056	U		0.0023	J	P	0.0056	U	
SILVER		0.0022	U		0.0022	U		0.0022	U		0.0022	U	
THALLIUM		0.001	U		0.001	U		0.001	U		0.001	U	
VANADIUM		0.0016	J	P	0.0022	U		0.0022	U		0.01		

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415-DL			MRC-MW12B-062415-DL			MRC-MW14A-062415			MRC-MW14B-062415		
SDG: 2078952	LAB_ID	2078952003			2078952004			2078952005			2078952002		
FRACTION: OS	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		202			162			6.2			156		

PROJ_NO: 06247	NSAMPLE	MRC-MW12A-062415			MRC-MW12B-062415			MRC-MW14B-062415		
SDG: 2078952	LAB_ID	2078952003			2078952004			2078952002		
FRACTION: OVG	SAMP_DATE	6/24/2015			6/24/2015			6/24/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		3.3	U		3.3	U		0.24	J	P
ETHENE		0.4	J	P	2.4	U		0.8	J	P
METHANE		27.4			22.6			1110		

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952001** Date Collected: 6/24/2015 20:20 Matrix: Water

Sample ID: **TB-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	8.2J	J	ug/L	10.0	3.1	SW846 8260C		6/25/15 12:32	TMP	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/25/15 12:32	TMP	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 12:32	TMP	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 12:32	TMP	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/25/15 12:32	TMP	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/25/15 12:32	TMP	A
2-Butanone	3.8J	J	ug/L	10.0	1.8	SW846 8260C		6/25/15 12:32	TMP	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/25/15 12:32	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:32	TMP	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/25/15 12:32	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/25/15 12:32	TMP	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 12:32	TMP	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/25/15 12:32	TMP	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:32	TMP	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 12:32	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/25/15 12:32	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 12:32	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/25/15 12:32	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/25/15 12:32	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 12:32	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 12:32	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 12:32	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 12:32	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 12:32	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 12:32	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 12:32	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/25/15 12:32	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:32	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 12:32	TMP	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/25/15 12:32	TMP	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/25/15 12:32	TMP	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 12:32	TMP	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/25/15 12:32	TMP	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/25/15 12:32	TMP	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/25/15 12:32	TMP	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/25/15 12:32	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952001** Date Collected: 6/24/2015 20:20 Matrix: Water

Sample ID: **TB-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:32	TMP	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/25/15 12:32	TMP	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/25/15 12:32	TMP	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 12:32	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/25/15 12:32	TMP	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/25/15 12:32	TMP	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/25/15 12:32	TMP	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/25/15 12:32	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/25/15 12:32	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/25/15 12:32	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:32	TMP	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:32	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 12:32	TMP	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/25/15 12:32	TMP	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:32	TMP	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/25/15 12:32	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	89.9		%	62 - 133	SW846 8260C			6/25/15 12:32	TMP	A
4-Bromofluorobenzene (S)	88.1		%	79 - 114	SW846 8260C			6/25/15 12:32	TMP	A
Dibromofluoromethane (S)	90.9		%	78 - 116	SW846 8260C			6/25/15 12:32	TMP	A
Toluene-d8 (S)	95.3		%	76 - 127	SW846 8260C			6/25/15 12:32	TMP	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952002** Date Collected: 6/24/2015 10:00 Matrix: Water

Sample ID: **MRC-MW14B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	63.2		ug/L	10.0	3.1	SW846 8260C		6/25/15 12:49	TMP	I
Benzene	25.4		ug/L	1.0	0.23	SW846 8260C		6/25/15 12:49	TMP	I
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 12:49	TMP	I
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 12:49	TMP	I
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/25/15 12:49	TMP	I
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/25/15 12:49	TMP	I
2-Butanone	138		ug/L	10.0	1.8	SW846 8260C		6/25/15 12:49	TMP	I
Carbon Disulfide	1.5		ug/L	1.0	0.23	SW846 8260C		6/25/15 12:49	TMP	I
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:49	TMP	I
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/25/15 12:49	TMP	I
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/25/15 12:49	TMP	I
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 12:49	TMP	I
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/25/15 12:49	TMP	I
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:49	TMP	I
Cyclohexane	0.30J	J	ug/L	1.0	0.29	SW846 8260C		6/25/15 12:49	TMP	I
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/25/15 12:49	TMP	I
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 12:49	TMP	I
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/25/15 12:49	TMP	I
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/25/15 12:49	TMP	I
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 12:49	TMP	I
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 12:49	TMP	I
1,1-Dichloroethane	37.5		ug/L	1.0	0.28	SW846 8260C		6/25/15 12:49	TMP	I
1,2-Dichloroethane	3.1		ug/L	1.0	0.32	SW846 8260C		6/25/15 12:49	TMP	I
1,1-Dichloroethene	156		ug/L	25.0	7.3	SW846 8260C		6/27/15 13:24	JPA	I
cis-1,2-Dichloroethene	859		ug/L	25.0	8.0	SW846 8260C		6/27/15 13:24	JPA	I
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 12:49	TMP	I
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/25/15 12:49	TMP	I
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 12:49	TMP	I
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 12:49	TMP	I
1,4-Dioxane	290J	J	ug/L	320	58.9	SW846 8260C		6/25/15 12:49	TMP	I
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/25/15 12:49	TMP	I
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 12:49	TMP	I
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/25/15 12:49	TMP	I
Isopropylbenzene	0.48J	J	ug/L	1.0	0.22	SW846 8260C		6/25/15 12:49	TMP	I
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/25/15 12:49	TMP	I
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/25/15 12:49	TMP	I

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952002** Date Collected: 6/24/2015 10:00 Matrix: Water

Sample ID: **MRC-MW14B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:49	TMP	I
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/25/15 12:49	TMP	I
Methylene Chloride	1.2		ug/L	1.0	0.45	SW846 8260C			6/25/15 12:49	TMP	I
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 12:49	TMP	I
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/25/15 12:49	TMP	I
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/25/15 12:49	TMP	I
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/25/15 12:49	TMP	I
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/25/15 12:49	TMP	I
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/25/15 12:49	TMP	I
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/25/15 12:49	TMP	I
1,1,2-Trichloroethane	1.9		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:49	TMP	I
Trichloroethene	2.0		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:49	TMP	I
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 12:49	TMP	I
Vinyl Chloride	2.6		ug/L	1.0	0.30	SW846 8260C			6/25/15 12:49	TMP	I
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 12:49	TMP	I
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/25/15 12:49	TMP	I
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.8		%	62 - 133		SW846 8260C			6/25/15 12:49	TMP	I
1,2-Dichloroethane-d4 (S)	87.2		%	62 - 133		SW846 8260C			6/27/15 13:24	JPA	I
4-Bromofluorobenzene (S)	81.3		%	79 - 114		SW846 8260C			6/25/15 12:49	TMP	I
4-Bromofluorobenzene (S)	106		%	79 - 114		SW846 8260C			6/27/15 13:24	JPA	I
Dibromofluoromethane (S)	91		%	78 - 116		SW846 8260C			6/25/15 12:49	TMP	I
Dibromofluoromethane (S)	87.5		%	78 - 116		SW846 8260C			6/27/15 13:24	JPA	I
Toluene-d8 (S)	98.5		%	76 - 127		SW846 8260C			6/27/15 13:24	JPA	I
Toluene-d8 (S)	97.2		%	76 - 127		SW846 8260C			6/25/15 12:49	TMP	I
LIGHT HYDROCARBON GASES											
Ethane	0.24J	J1	ug/L	3.3	0.23	RSK 175			6/26/15 07:43	KJH	I
Ethene	0.80J	J	ug/L	2.4	0.40	RSK 175			6/26/15 07:43	KJH	I
Methane	1110		ug/L	1.5	0.34	RSK 175			6/26/15 07:43	KJH	I
SEMIVOLATILES											
1,4-Dioxane	156		ug/L	0.70	0.14	EPA 522	6/26/15	JEK	7/3/15 03:21	DHF	M
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	48.8	3	%	70 - 130		EPA 522	6/26/15	JEK	7/3/15 03:21	DHF	M
WET CHEMISTRY											
Alkalinity, Total	527		mg/L	5	0.8	S2320B-97			6/25/15 21:10	MBW	F

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952002** Date Collected: 6/24/2015 10:00 Matrix: Water

Sample ID: **MRC-MW14B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Ammonia-nitrogen, Total	0.46		mg/L	0.10	0.04	S4500NH3D	6/25/15	J1H	6/26/15 14:00	NJA	G
Chloride	83.0		mg/L	5.0	0.31	EPA 300.0			6/26/15 03:07	JP	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			6/26/15 03:07	JP	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			6/26/15 03:07	JP	H
Orthophosphate	0.020		mg/L	0.020	0.0025	EPA 365.3			6/25/15 04:41	GMM	H
Sulfate	0.85J	J	mg/L	5.0	0.32	EPA 300.0			6/26/15 03:07	JP	H
Total Dissolved Solids	1270		mg/L	5	5	S2540C-11			6/25/15 18:00	NV	H
Total Organic Carbon (TOC)	471		mg/L	100	23.7	S5310B-00			6/25/15 12:06	PAG	L
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Arsenic, Total	0.0099		mg/L	0.0030	0.0010	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Barium, Total	0.28		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Beryllium, Total	0.00040J	J	mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Chromium, Total	0.0038		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Cobalt, Total	0.11		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Copper, Total	0.0052J	J	mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Iron, Total	215		mg/L	0.067	0.022	SW846 6010C	6/25/15	JPS	6/25/15 13:45	SRT	D1
Lead, Total	0.0026		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Manganese, Total	7.0		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Mercury, Total	0.00013J	J	mg/L	0.00022	0.000077	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D
Molybdenum, Total	0.0018J	J	mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Nickel, Total	0.16		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2
Vanadium, Total	0.010		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:34	MO	D2

Debra J Musser

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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952003** Date Collected: 6/24/2015 11:35 Matrix: Water

Sample ID: **MRC-MW12A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/25/15 13:06	TMP	I
Benzene	4.0		ug/L	1.0	0.23	SW846 8260C		6/25/15 13:06	TMP	I
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:06	TMP	I
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:06	TMP	I
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/25/15 13:06	TMP	I
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/25/15 13:06	TMP	I
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/25/15 13:06	TMP	I
Carbon Disulfide	0.38J	J	ug/L	1.0	0.23	SW846 8260C		6/25/15 13:06	TMP	I
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:06	TMP	I
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/25/15 13:06	TMP	I
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/25/15 13:06	TMP	I
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:06	TMP	I
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/25/15 13:06	TMP	I
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:06	TMP	I
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:06	TMP	I
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/25/15 13:06	TMP	I
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:06	TMP	I
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/25/15 13:06	TMP	I
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/25/15 13:06	TMP	I
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:06	TMP	I
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:06	TMP	I
1,1-Dichloroethane	25.3		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:06	TMP	I
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:06	TMP	I
1,1-Dichloroethene	178		ug/L	20.0	5.8	SW846 8260C		6/27/15 13:45	JPA	I
cis-1,2-Dichloroethene	100		ug/L	20.0	6.4	SW846 8260C		6/27/15 13:45	JPA	I
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:06	TMP	I
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/25/15 13:06	TMP	I
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:06	TMP	I
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:06	TMP	I
1,4-Dioxane	133J	J	ug/L	320	58.9	SW846 8260C		6/25/15 13:06	TMP	I
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/25/15 13:06	TMP	I
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:06	TMP	I
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/25/15 13:06	TMP	I
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/25/15 13:06	TMP	I
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/25/15 13:06	TMP	I
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/25/15 13:06	TMP	I

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952003** Date Collected: 6/24/2015 11:35 Matrix: Water

Sample ID: **MRC-MW12A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:06	TMP	I
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/25/15 13:06	TMP	I
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/25/15 13:06	TMP	I
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:06	TMP	I
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/25/15 13:06	TMP	I
Tetrachloroethene	1.1		ug/L	1.0	0.35	SW846 8260C			6/25/15 13:06	TMP	I
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/25/15 13:06	TMP	I
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/25/15 13:06	TMP	I
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/25/15 13:06	TMP	I
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/25/15 13:06	TMP	I
1,1,2-Trichloroethane	1.8		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:06	TMP	I
Trichloroethene	838		ug/L	20.0	6.6	SW846 8260C			6/27/15 13:45	JPA	I
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:06	TMP	I
Vinyl Chloride	2.8		ug/L	1.0	0.30	SW846 8260C			6/25/15 13:06	TMP	I
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:06	TMP	I
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/25/15 13:06	TMP	I
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	87.1		%	62 - 133		SW846 8260C			6/27/15 13:45	JPA	I
1,2-Dichloroethane-d4 (S)	95.9		%	62 - 133		SW846 8260C			6/25/15 13:06	TMP	I
4-Bromofluorobenzene (S)	106		%	79 - 114		SW846 8260C			6/27/15 13:45	JPA	I
4-Bromofluorobenzene (S)	88.6		%	79 - 114		SW846 8260C			6/25/15 13:06	TMP	I
Dibromofluoromethane (S)	88.9		%	78 - 116		SW846 8260C			6/27/15 13:45	JPA	I
Dibromofluoromethane (S)	96.5		%	78 - 116		SW846 8260C			6/25/15 13:06	TMP	I
Toluene-d8 (S)	96		%	76 - 127		SW846 8260C			6/25/15 13:06	TMP	I
Toluene-d8 (S)	98		%	76 - 127		SW846 8260C			6/27/15 13:45	JPA	I
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			6/26/15 08:14	KJH	I
Ethene	0.40J	J	ug/L	2.4	0.40	RSK 175			6/26/15 08:14	KJH	I
Methane	27.4		ug/L	1.5	0.34	RSK 175			6/26/15 08:14	KJH	I
SEMIVOLATILES											
1,4-Dioxane	202		ug/L	1.4	0.28	EPA 522	6/26/15	JEK	6/29/15 16:21	CGS	M
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	84.8		%	70 - 130		EPA 522	6/26/15	JEK	6/28/15 13:42	CGS	M
1,4-Dioxane-d8 (S)	92		%	70 - 130		EPA 522	6/26/15	JEK	6/29/15 16:21	CGS	M
WET CHEMISTRY											
Alkalinity, Total	26		mg/L	5	0.8	S2320B-97			6/25/15 21:21	MBW	F

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952003** Date Collected: 6/24/2015 11:35 Matrix: Water

Sample ID: **MRC-MW12A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Ammonia-nitrogen, Total	0.43		mg/L	0.10	0.04	S4500NH3D	6/25/15	J1H	6/26/15 14:00	NJA	G
Chloride	56.1		mg/L	5.0	0.31	EPA 300.0			6/26/15 03:21	JP	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			6/26/15 03:21	JP	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			6/26/15 03:21	JP	H
Orthophosphate	0.030		mg/L	0.020	0.0025	EPA 365.3			6/25/15 04:41	GMM	H
Sulfate	123		mg/L	5.0	0.32	EPA 300.0			6/26/15 03:21	JP	H
Total Dissolved Solids	330		mg/L	5	5	S2540C-11			6/25/15 18:00	NV	H
Total Organic Carbon (TOC)	6.0		mg/L	1.0	0.24	S5310B-00			6/25/15 12:06	PAG	L
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Arsenic, Total	0.0016J	J	mg/L	0.0030	0.0010	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Barium, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Beryllium, Total	0.0010J	J	mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Chromium, Total	0.0021J	J	mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Cobalt, Total	0.068		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Copper, Total	0.0025J	J	mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Iron, Total	62.2		mg/L	0.067	0.022	SW846 6010C	6/25/15	JPS	6/25/15 13:48	SRT	D1
Lead, Total	0.0041		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Manganese, Total	3.5		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Mercury, Total	0.00014J	J	mg/L	0.00022	0.000077	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Nickel, Total	0.12		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2
Vanadium, Total	0.0016J	J	mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:37	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952004** Date Collected: 6/24/2015 13:45 Matrix: Water

Sample ID: **MRC-MW12B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/25/15 13:23	TMP	I
Benzene	4.0		ug/L	1.0	0.23	SW846 8260C		6/25/15 13:23	TMP	I
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:23	TMP	I
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:23	TMP	I
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/25/15 13:23	TMP	I
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/25/15 13:23	TMP	I
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/25/15 13:23	TMP	I
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/25/15 13:23	TMP	I
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:23	TMP	I
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/25/15 13:23	TMP	I
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/25/15 13:23	TMP	I
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:23	TMP	I
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/25/15 13:23	TMP	I
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:23	TMP	I
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:23	TMP	I
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/25/15 13:23	TMP	I
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:23	TMP	I
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/25/15 13:23	TMP	I
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/25/15 13:23	TMP	I
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:23	TMP	I
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:23	TMP	I
1,1-Dichloroethane	20.5		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:23	TMP	I
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:23	TMP	I
1,1-Dichloroethene	161		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:23	TMP	I
cis-1,2-Dichloroethene	80.4		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:23	TMP	I
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:23	TMP	I
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/25/15 13:23	TMP	I
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:23	TMP	I
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:23	TMP	I
1,4-Dioxane	105J	J	ug/L	320	58.9	SW846 8260C		6/25/15 13:23	TMP	I
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/25/15 13:23	TMP	I
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:23	TMP	I
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/25/15 13:23	TMP	I
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/25/15 13:23	TMP	I
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/25/15 13:23	TMP	I
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/25/15 13:23	TMP	I

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952004** Date Collected: 6/24/2015 13:45 Matrix: Water

Sample ID: **MRC-MW12B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:23	TMP	I
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/25/15 13:23	TMP	I
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/25/15 13:23	TMP	I
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:23	TMP	I
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/25/15 13:23	TMP	I
Tetrachloroethene	0.86J	J	ug/L	1.0	0.35	SW846 8260C			6/25/15 13:23	TMP	I
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/25/15 13:23	TMP	I
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/25/15 13:23	TMP	I
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/25/15 13:23	TMP	I
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/25/15 13:23	TMP	I
1,1,2-Trichloroethane	1.5		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:23	TMP	I
Trichloroethene	777		ug/L	20.0	6.6	SW846 8260C			6/27/15 14:06	JPA	I
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:23	TMP	I
Vinyl Chloride	0.56J	J	ug/L	1.0	0.30	SW846 8260C			6/25/15 13:23	TMP	I
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:23	TMP	I
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/25/15 13:23	TMP	I
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.8		%	62 - 133		SW846 8260C			6/25/15 13:23	TMP	I
1,2-Dichloroethane-d4 (S)	87.6		%	62 - 133		SW846 8260C			6/27/15 14:06	JPA	I
4-Bromofluorobenzene (S)	87.8		%	79 - 114		SW846 8260C			6/25/15 13:23	TMP	I
4-Bromofluorobenzene (S)	106		%	79 - 114		SW846 8260C			6/27/15 14:06	JPA	I
Dibromofluoromethane (S)	88		%	78 - 116		SW846 8260C			6/27/15 14:06	JPA	I
Dibromofluoromethane (S)	95.5		%	78 - 116		SW846 8260C			6/25/15 13:23	TMP	I
Toluene-d8 (S)	98.2		%	76 - 127		SW846 8260C			6/27/15 14:06	JPA	I
Toluene-d8 (S)	97.2		%	76 - 127		SW846 8260C			6/25/15 13:23	TMP	I
LIGHT HYDROCARBON GASES											
Ethane	ND		ug/L	3.3	0.23	RSK 175			6/26/15 08:34	KJH	I
Ethene	ND		ug/L	2.4	0.40	RSK 175			6/26/15 08:34	KJH	I
Methane	22.6		ug/L	1.5	0.34	RSK 175			6/26/15 08:34	KJH	I
SEMIVOLATILES											
1,4-Dioxane	162		ug/L	0.70	0.14	EPA 522	6/26/15	JEK	6/29/15 16:47	CGS	M
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	90.3		%	70 - 130		EPA 522	6/26/15	JEK	6/28/15 14:07	CGS	M
1,4-Dioxane-d8 (S)	97.3		%	70 - 130		EPA 522	6/26/15	JEK	6/29/15 16:47	CGS	M
WET CHEMISTRY											
Alkalinity, Total	29		mg/L	5	0.8	S2320B-97			6/25/15 21:32	MBW	F

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952004** Date Collected: 6/24/2015 13:45 Matrix: Water

Sample ID: **MRC-MW12B-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Ammonia-nitrogen, Total	0.16		mg/L	0.10	0.04	S4500NH3D	6/25/15	J1H	6/26/15 14:00	NJA	G
Chloride	36.6		mg/L	5.0	0.31	EPA 300.0			6/26/15 03:34	JP	H
Nitrate-N	ND		mg/L	0.50	0.092	EPA 300.0			6/26/15 03:34	JP	H
Nitrite-N	ND		mg/L	0.50	0.11	EPA 300.0			6/26/15 03:34	JP	H
Orthophosphate	0.023		mg/L	0.020	0.0025	EPA 365.3			6/25/15 04:41	GMM	H
Sulfate	64.1		mg/L	5.0	0.32	EPA 300.0			6/26/15 03:34	JP	H
Total Dissolved Solids	194		mg/L	5	5	S2540C-11			6/25/15 18:00	NV	H
Total Organic Carbon (TOC)	2.9		mg/L	1.0	0.24	S5310B-00			6/25/15 12:06	PAG	L
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Barium, Total	0.16		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Chromium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Cobalt, Total	0.048		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Iron, Total	52.5		mg/L	0.067	0.022	SW846 6010C	6/25/15	JPS	6/25/15 13:52	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Manganese, Total	3.0		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Mercury, Total	0.000088 J	J	mg/L	0.00022	0.00007 7	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Nickel, Total	0.090		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:41	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952005** Date Collected: 6/24/2015 15:15 Matrix: Water

Sample ID: **MRC-MW14A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/25/15 13:40	TMP	C
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/25/15 13:40	TMP	C
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:40	TMP	C
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:40	TMP	C
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/25/15 13:40	TMP	C
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/25/15 13:40	TMP	C
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/25/15 13:40	TMP	C
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/25/15 13:40	TMP	C
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:40	TMP	C
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/25/15 13:40	TMP	C
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/25/15 13:40	TMP	C
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:40	TMP	C
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/25/15 13:40	TMP	C
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:40	TMP	C
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:40	TMP	C
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/25/15 13:40	TMP	C
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:40	TMP	C
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/25/15 13:40	TMP	C
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/25/15 13:40	TMP	C
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/25/15 13:40	TMP	C
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/25/15 13:40	TMP	C
1,1-Dichloroethane	1.2		ug/L	1.0	0.28	SW846 8260C		6/25/15 13:40	TMP	C
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:40	TMP	C
1,1-Dichloroethene	1.9		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:40	TMP	C
cis-1,2-Dichloroethene	20.6		ug/L	1.0	0.32	SW846 8260C		6/25/15 13:40	TMP	C
trans-1,2-Dichloroethene	4.8		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:40	TMP	C
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/25/15 13:40	TMP	C
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/25/15 13:40	TMP	C
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/25/15 13:40	TMP	C
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/25/15 13:40	TMP	C
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/25/15 13:40	TMP	C
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/25/15 13:40	TMP	C
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/25/15 13:40	TMP	C
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/25/15 13:40	TMP	C
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/25/15 13:40	TMP	C
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/25/15 13:40	TMP	C

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952005** Date Collected: 6/24/2015 15:15 Matrix: Water

Sample ID: **MRC-MW14A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:40	TMP	C
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/25/15 13:40	TMP	C
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/25/15 13:40	TMP	C
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:40	TMP	C
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/25/15 13:40	TMP	C
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/25/15 13:40	TMP	C
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/25/15 13:40	TMP	C
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/25/15 13:40	TMP	C
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/25/15 13:40	TMP	C
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/25/15 13:40	TMP	C
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:40	TMP	C
Trichloroethene	7.1J	J1	ug/L	10.0	0.33	SW846 8260C			6/25/15 13:40	TMP	C
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/25/15 13:40	TMP	C
Vinyl Chloride	0.41J	J	ug/L	1.0	0.30	SW846 8260C			6/25/15 13:40	TMP	C
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/25/15 13:40	TMP	C
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/25/15 13:40	TMP	C
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.3		%	62 - 133		SW846 8260C			6/25/15 13:40	TMP	C
4-Bromofluorobenzene (S)	82		%	79 - 114		SW846 8260C			6/25/15 13:40	TMP	C
Dibromofluoromethane (S)	95.1		%	78 - 116		SW846 8260C			6/25/15 13:40	TMP	C
Toluene-d8 (S)	93.8		%	76 - 127		SW846 8260C			6/25/15 13:40	TMP	C
SEMIVOLATILES											
1,4-Dioxane	6.2		ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/28/15 14:33	CGS	F
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	86.9		%	70 - 130		EPA 522	6/26/15	JEK	6/28/15 14:33	CGS	F
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Barium, Total	0.14		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Chromium, Total	0.0013J	J	mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Cobalt, Total	0.024		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Copper, Total	0.0024J	J	mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Iron, Total	26.4		mg/L	0.067	0.022	SW846 6010C	6/25/15	JPS	6/25/15 13:56	SRT	D1
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2078952 TMM046|112IC06247

Lab ID: **2078952005** Date Collected: 6/24/2015 15:15 Matrix: Water

Sample ID: **MRC-MW14A-062415** Date Received: 6/24/2015 20:20

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	1.8		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Mercury, Total	ND		mg/L	0.00022	0.000077	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D1
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Nickel, Total	0.024		mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Selenium, Total	0.0023J	J	mg/L	0.0056	0.0019	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/25/15	JPS	6/25/15 14:45	MO	D2

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-046

Sample Management

This report contains the results of the analysis of five (5) water samples collected on June 24, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on June 24, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Five (5) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Four (4) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits; except as follows:

- In sample MRC-MW14B-062415 (2078952002), 1,4-dioxane-d8 was recovered below the control limits. This sample was originally analyzed at a 1:1 dilutions and recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criteria.

Light Hydrocarbon Gases by RSK-175

Sample Handling. Three (3) water samples were submitted for the analysis of light hydrocarbon gases by Method RSK-175. The samples were analyzed within the method specified holding time of fourteen days.

Calibrations. The initial calibrations met method criteria for all light hydrocarbon gases.

Calibration verification. Prior to the analysis of samples in this group, the initial calibrations were successfully verified by the analysis of calibration verification standards. The samples were then successfully bracketed with alternating calibration verification standards (CCV) throughout the analysis.

Blanks. Light hydrocarbon gases were not detected in the method blank.

Duplicate Sample. A duplicate sample, identified as 2197469, was prepared from project sample MRC-MW14B-062415 (2078952002). Target analytes were detected as follows:

- Methane was detected at 1110 µg/L in the sample and at 1220 µg/L in the duplicate sample with a %RPD of 9%. All other target analytes were not detected above the reporting limit.

Total Metals by SW-846 Method 6010C

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Metals by SW-846 Method 6020A

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the ICB and CCBs at 0.0011 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on a sample, 2079226002 in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

Ammonia-Nitrogen by SM4500NH3D

Sample handling. Three (3) aqueous samples were analyzed for ammonia-nitrogen by Standard Method 4500NH3D. The samples were distilled and analyzed within the 28-day holding time established for the method.

Calibration. An initial calibration was properly established on the day of analysis and a second source standard was analyzed throughout the analysis to verify the calibration. The recoveries were within the QC limits.

Blank. A preparation blank, identified as 2197117, was distilled and analyzed with the samples. Initial and continuing method blanks were also analyzed. Ammonia-nitrogen was not detected above the reporting limit in the blanks.

Laboratory Control Sample. A laboratory control sample, identified as 2197118, was distilled and analyzed with the samples. The recovery was within QC limits.

Anions by EPA 300.0

Sample handling. Three (3) aqueous samples were analyzed for chloride, nitrate-nitrogen, nitrite-nitrogen and sulfate by EPA Method 300.0. The samples were run within method recommended holding time for each analyte.

Calibration. Initial calibrations, identified as Method A (high range) and Method L (low range), were properly established. Initial and continuing calibration verification standards were recovered within the QC limits.

Blanks. Initial and continuing blanks were analyzed with the samples. No analytes were detected above the reporting limits in the blanks.

Laboratory Control Samples. Laboratory control samples, identified as 2197073 and SSL, were analyzed initially and every 20 samples. The bracketing LCS (2197073) was above the QC limit for sulfate. The effected samples were inadvertently not commented

on in LIMS. No other analyte was affected by the failing QC. All other recoveries were within the QC limits.

Ortho-Phosphate by SM 4500PE

Sample handling. Three (3) aqueous samples were analyzed for ortho-phosphate by Standard Method 4500PE. The samples were analyzed within the holding time established for this method.

Calibration. An initial calibration was established. Continuing calibration verification standards were analyzed on the day of analysis to verify the calibration. All recoveries were within the QC limits.

Blanks. Initial and continuing method blanks were analyzed with the samples. Ortho-phosphate was not detected above the reporting limit in the blanks.

Total Alkalinity by SM 2320B

Sample handling. Three (3) aqueous samples were analyzed for total alkalinity by Standard Method 2320B. The samples were analyzed within the 14-day holding time established for the method.

Blanks. Method blanks were analyzed with the samples. Total alkalinity was not detected above the reporting limit in the blanks.

Calibration. The autotitrator was pH calibrated on the day of analysis. Total alkalinity and pH standards were analyzed initially and throughout the analysis. The standards were recovered within QC limits.

Total Dissolved Solids by SM2540C

Sample handling. Three (3) aqueous samples were analyzed for total dissolved solids by Standard Method 2540C. The samples were analyzed within the 7-day holding time established for the method.

Blank. A preparation blank, identified as 2197183 MB, was analyzed with the samples. Total dissolved solids were not detected above the reporting limit in the blank.

Laboratory Control Sample. A laboratory control sample, identified as 2197184, was analyzed with the samples. The recovery was within the QC limits.

Duplicate. A duplicate analysis, identified as 2197185, was performed on sample 2078952004 (MRC-MW12B-062415). The relative percent difference between the results was within the QC limit.

Total Organic Carbon by SM 5310B

Sample handling. Three (3) aqueous samples were analyzed for total organic carbon by Standard Method 5310B. The samples were analyzed within the 28-day holding time established for the method.

Calibration. All calibrations were properly established. The recoveries were within the QC limits.

Blanks. Method blanks were analyzed with the samples. Total organic carbon was not detected above the reporting limit in the blanks.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 8/26/2015

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE _

* 2 0 7 8 9 5 2 *

Project Name: MRC GW Sampling	Project Number: 112IC06247
Project Manager: Tony Aparavage	Report CC:
Company/Address: 20251 Century Blvd Ste 200 Germantown MD, 20874	
Phone #: (301)528-3002	Email: Tony.Aparavage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Stu Cameron

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 1 | 0 | 1 | 0 | 3 | 2 | | 3 | 0

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs 8260 • 624 • CLP	GC/MS SVOAs 8270 • 625	VOAs 8021 • 601/602	PESTICIDES 8081 • 608	PCBs 8082 • 608	METALS, TOTAL (List in comments below) 6010A	METALS, DISSOLVED (List in comments below)	TOCs (Lachat, 9060, 415.1, 1030, 5310)							REMARKS/ ALTERNATE DESCRIPTION
TB-062415		←	~	AQ	2	X2							X							
MRC-MW14B-062415		6-24-15	1000		13	X3	X2	X3	X1	X1	X1		X1	X						*48-hour TAT*
MRC-MW12A-062415			1135		13	X3	X2	X3	X1	X1	X1		X1	X1						*48-hour TAT*
MRC-MW12B-062415			1345		13	X3	X2	X3	X1	X1	X1		X1	X1						*48-hour TAT*
MRC-MW14A-062415		↓	1515	↓	6	X3	X2				X1									*48-hour TAT*

6/24/15 TG

Preservative Key: 0. NONE 1. HCL 2. HNO_3 3. H_2SO_4 4. NaOH 5. Zn. Acetate 6. MeOH 7. $NaHSO_4$ 8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

Metals

* 48-hour TAT *
on 1,4 dioxanes, NO_2, NO_3

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)
_____ 1 day X 2 day _____ 3 day
_____ 4 day _____ 5 day

REQUESTED REPORT DATE: _____

REPORT REQUIREMENTS

_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
X IV. Data Validation (Level 4) + Electronic Data
_____ RELI...

INVOICE INFORMATION

PO # 112IC06247
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature
Printed Name: Travor Grandy	Printed Name: Lawrence Lawson	Printed Name: Lawrence Lawson	Printed Name
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm
Date/Time: 6/24/15 1545	Date/Time: 6/24/15 1545	Date/Time: 6/24/15 1630	Date/Time

	Y	N	Initials
Custody Seals Present?			LMG
If present, Seals Intact?	✓		
Received on Ice?	✓		
COC/LIMS Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			
Tracking #			

Cooler Temp: 1 C
Cooler #:
Therm ID: 291
Ship Carrier: FedEx UPS DHL

Distribution: White - Lab Copy; Yellow - Return to Originator

6/24/15 JDW

LMG 06/25/15 0636

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2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-046

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2192681(LCS)	96.1	88.3	85.1	95.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-046

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2196949(MB)	85.5	94.3	94.2	95.3	0
03	2196950(LCS)	82.1	88.5	86.9	89.6	0
04	TB-062415	88.1	90.9	89.9	95.3	0
05	MRC-MW14B-062415	81.3	91.0	90.8	97.2	0
06	MRC-MW12A-062415	88.6	96.5	95.9	96.0	0
07	MRC-MW12B-062415	87.8	95.5	95.8	97.2	0
08	MRC-MW14A-062415	82.0	95.1	95.3	93.8	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-046

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
09	2193058(LCS)	93.6	91.6	90.1	95.9	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-046

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
10	2197921(MB)	107	88.5	88.3	98.9	0
11	2197922(LCS)	110	89.7	86.2	102	0
12	MRC-MW14B-062415	106	87.5	87.2	98.5	0
13	MRC-MW12A-062415	106	88.9	87.1	98.0	0
14	MRC-MW12B-062415	106	88.0	87.6	98.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2192681

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		96.8	96.8	(40-151)
Benzene	20.0		17.6	87.8	(80-124)
Bromochloromethane	20.0		20.7	104	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		16.7	83.6	(70-123)
Bromomethane	20.0		24.2	121	(45-148)
2-Butanone	100		104	104	(50-152)
Carbon Disulfide	20.0		18.8	94.1	(57-131)
Carbon Tetrachloride	20.0		21.6	108	(62-132)
Chlorobenzene	20.0		21.3	106	(85-117)
Chlorodibromomethane	20.0		17.4	87.1	(77-122)
Chloroethane	20.0		18.1	90.3	(51-142)
Chloroform	20.0		21.2	106	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		21.4	107	(66-130)
1,2-Dibromo-3-Chloropro	20.0		20.1	100	(59-133)
1,2-Dibromoethane	20.0		21.1	105	(80-124)
1,2-Dichlorobenzene	20.0		21.0	105	(82-118)
1,3-Dichlorobenzene	20.0		21.2	106	(81-118)
1,4-Dichlorobenzene	20.0		20.9	105	(81-116)
Dichlorodifluoromethane	20.0		17.7	88.3	(17-166)
1,1-Dichloroethane	20.0		20.3	101	(78-124)
1,2-Dichloroethane	20.0		20.8	104	(70-133)
1,1-Dichloroethene	20.0		20.5	103	(63-128)
cis-1,2-Dichloroethene	20.0		20.8	104	(78-125)
trans-1,2-Dichloroethen	20.0		21.5	107	(71-122)
1,2-Dichloropropane	20.0		21.3	107	(81-127)
cis-1,3-Dichloropropene	20.0		16.4	82.2	(81-121)
trans-1,3-Dichloroprope	20.0		17.4	87	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2192681

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		453	90.7	(1-280)
Ethylbenzene	20.0		20.5	102	(80-124)
Freon 113	20.0		20.4	102	(50-130)
2-Hexanone	100		94.7	94.7	(65-154)
Isopropylbenzene	20.0		16.4	82.2	(73-129)
Methyl acetate	20.0		19.3	96.5	(70-130)
Methyl cyclohexane	20.0		21.3	107	(70-130)
Methyl t-Butyl Ether	20.0		19.4	96.9	(69-115)
4-Methyl-2-Pentanone(MI	100		85.2	85.2	(71-146)
Methylene Chloride	20.0		20.0	100	(76-121)
Styrene	20.0		20.9	105	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.7	103	(74-135)
Tetrachloroethene	20.0		20.4	102	(72-124)
Toluene	20.0		20.3	102	(80-125)
1,2,3-Trichlorobenzene	20.0		17.3	86.3	(61-126)
1,2,4-Trichlorobenzene	20.0		16.7	83.5	(67-123)
1,1,1-Trichloroethane	20.0		21.0	105	(66-130)
1,1,2-Trichloroethane	20.0		21.0	105	(82-126)
Trichloroethene	20.0		20.8	104	(77-124)
Trichlorofluoromethane	20.0		19.3	96.3	(38-123)
Vinyl Chloride	20.0		19.7	98.6	(27-138)
o-Xylene	20.0		17.9	89.5	(79-124)
mp-Xylene	40.0		42.6	107	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2193058

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		111	111	(40-151)
Benzene	20.0		21.6	108	(80-124)
Bromochloromethane	20.0		22.0	110	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		21.8	109	(70-123)
Bromomethane	20.0		24.0	120	(45-148)
2-Butanone	100		99.3	99.3	(50-152)
Carbon Disulfide	20.0		21.6	108	(57-131)
Carbon Tetrachloride	20.0		22.6	113	(62-132)
Chlorobenzene	20.0		21.9	109	(85-117)
Chlorodibromomethane	20.0		22.2	111	(77-122)
Chloroethane	20.0		19.3	96.3	(51-142)
Chloroform	20.0		21.2	106	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		24.2	121	(66-130)
1,2-Dibromo-3-Chloropro	20.0		20.3	102	(59-133)
1,2-Dibromoethane	20.0		22.2	111	(80-124)
1,2-Dichlorobenzene	20.0		21.4	107	(82-118)
1,3-Dichlorobenzene	20.0		21.7	108	(81-118)
1,4-Dichlorobenzene	20.0		21.3	106	(81-116)
Dichlorodifluoromethane	20.0		17.6	87.8	(17-166)
1,1-Dichloroethane	20.0		21.1	106	(78-124)
1,2-Dichloroethane	20.0		20.9	105	(70-133)
1,1-Dichloroethene	20.0		22.0	110	(63-128)
cis-1,2-Dichloroethene	20.0		21.0	105	(78-125)
trans-1,2-Dichloroethen	20.0		22.5	112	(71-122)
1,2-Dichloropropane	20.0		21.7	108	(81-127)
cis-1,3-Dichloropropene	20.0		21.8	109	(81-121)
trans-1,3-Dichloroprope	20.0		22.7	113	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2193058

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		338	67.5	(1-280)
Ethylbenzene	20.0		22.8	114	(80-124)
Freon 113	20.0		23.7	119	(50-130)
2-Hexanone	100		110	110	(65-154)
Isopropylbenzene	20.0		23.8	119	(73-129)
Methyl acetate	20.0		22.2	111	(70-130)
Methyl cyclohexane	20.0		25.0	125	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		112	112	(71-146)
Methylene Chloride	20.0		21.6	108	(76-121)
Styrene	20.0		22.9	115	(79-123)
1,1,2,2-Tetrachloroetha	20.0		21.0	105	(74-135)
Tetrachloroethene	20.0		22.4	112	(72-124)
Toluene	20.0		22.5	113	(80-125)
1,2,3-Trichlorobenzene	20.0		21.8	109	(61-126)
1,2,4-Trichlorobenzene	20.0		21.9	109	(67-123)
1,1,1-Trichloroethane	20.0		22.0	110	(66-130)
1,1,2-Trichloroethane	20.0		21.2	106	(82-126)
Trichloroethene	20.0		21.8	109	(77-124)
Trichlorofluoromethane	20.0		19.1	95.4	(38-123)
Vinyl Chloride	20.0		19.4	96.9	(27-138)
o-Xylene	20.0		22.4	112	(79-124)
mp-Xylene	40.0		46.0	115	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2196950

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		112	112	(40-151)
Benzene	20.0		19.0	95.1	(80-124)
Bromochloromethane	20.0		22.0	110	(73-117)
Bromodichloromethane	20.0		21.7	108	(79-126)
Bromoform	20.0		16.4	81.9	(70-123)
Bromomethane	20.0		21.5	107	(45-148)
2-Butanone	100		115	115	(50-152)
Carbon Disulfide	20.0		16.3	81.6	(57-131)
Carbon Tetrachloride	20.0		22.0	110	(62-132)
Chlorobenzene	20.0		21.3	106	(85-117)
Chlorodibromomethane	20.0		17.3	86.7	(77-122)
Chloroethane	20.0		16.8	83.9	(51-142)
Chloroform	20.0		22.7	114	(78-122)
Chloromethane	20.0		23.0	115	(38-156)
Cyclohexane	20.0		21.7	108	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.7	98.4	(59-133)
1,2-Dibromoethane	20.0		21.4	107	(80-124)
1,2-Dichlorobenzene	20.0		20.6	103	(82-118)
1,3-Dichlorobenzene	20.0		20.9	105	(81-118)
1,4-Dichlorobenzene	20.0		20.4	102	(81-116)
Dichlorodifluoromethane	20.0		19.3	96.5	(17-166)
1,1-Dichloroethane	20.0		21.4	107	(78-124)
1,2-Dichloroethane	20.0		22.2	111	(70-133)
1,1-Dichloroethene	20.0		18.7	93.6	(63-128)
cis-1,2-Dichloroethene	20.0		22.3	112	(78-125)
trans-1,2-Dichloroethen	20.0		23.9	120	(71-122)
1,2-Dichloropropane	20.0		22.7	114	(81-127)
cis-1,3-Dichloropropene	20.0		16.9	84.7	(81-121)
trans-1,3-Dichloroprope	20.0		17.9	89.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2196950

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		536	107	(1-280)
Ethylbenzene	20.0		20.0	99.8	(80-124)
Freon 113	20.0		17.2	86	(50-130)
2-Hexanone	100		97.0	97	(65-154)
Isopropylbenzene	20.0		15.8	78.9	(73-129)
Methyl acetate	20.0		20.7	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.2	(70-130)
Methyl t-Butyl Ether	20.0		21.0	105	(69-115)
4-Methyl-2-Pentanone(MI	100		87.1	87.1	(71-146)
Methylene Chloride	20.0		21.5	107	(76-121)
Styrene	20.0		21.2	106	(79-123)
1,1,2,2-Tetrachloroetha	20.0		21.2	106	(74-135)
Tetrachloroethene	20.0		20.1	100	(72-124)
Toluene	20.0		20.6	103	(80-125)
1,2,3-Trichlorobenzene	20.0		14.0	70.2	(61-126)
1,2,4-Trichlorobenzene	20.0		13.5	67.5	(67-123)
1,1,1-Trichloroethane	20.0		22.3	112	(66-130)
1,1,2-Trichloroethane	20.0		21.2	106	(82-126)
Trichloroethene	20.0		22.3	112	(77-124)
Trichlorofluoromethane	20.0		19.1	95.3	(38-123)
Vinyl Chloride	20.0		21.5	108	(27-138)
o-Xylene	20.0		17.6	88	(79-124)
mp-Xylene	40.0		41.6	104	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2197922

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		91.3	91.3	(40-151)
Benzene	20.0		18.6	92.9	(80-124)
Bromochloromethane	20.0		19.6	98.2	(73-117)
Bromodichloromethane	20.0		17.9	89.5	(79-126)
Bromoform	20.0		22.1	111	(70-123)
Bromomethane	20.0		19.8	99	(45-148)
2-Butanone	100		84.3	84.3	(50-152)
Carbon Disulfide	20.0		18.9	94.6	(57-131)
Carbon Tetrachloride	20.0		20.7	104	(62-132)
Chlorobenzene	20.0		21.4	107	(85-117)
Chlorodibromomethane	20.0		21.6	108	(77-122)
Chloroethane	20.0		17.7	88.4	(51-142)
Chloroform	20.0		18.1	90.4	(78-122)
Chloromethane	20.0		15.4	77.1	(38-156)
Cyclohexane	20.0		21.4	107	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.6	92.8	(59-133)
1,2-Dibromoethane	20.0		21.2	106	(80-124)
1,2-Dichlorobenzene	20.0		21.3	106	(82-118)
1,3-Dichlorobenzene	20.0		21.6	108	(81-118)
1,4-Dichlorobenzene	20.0		21.6	108	(81-116)
Dichlorodifluoromethane	20.0		15.5	77.7	(17-166)
1,1-Dichloroethane	20.0		17.8	89	(78-124)
1,2-Dichloroethane	20.0		18.2	90.8	(70-133)
1,1-Dichloroethene	20.0		19.0	95.2	(63-128)
cis-1,2-Dichloroethene	20.0		17.8	88.9	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.1	(71-122)
1,2-Dichloropropane	20.0		18.2	90.9	(81-127)
cis-1,3-Dichloropropene	20.0		20.5	103	(81-121)
trans-1,3-Dichloroprope	20.0		21.7	108	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Laboratory Control Spike - Sample No: 2197922

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		0	33	(1-280)
Ethylbenzene	20.0		21.9	110	(80-124)
Freon 113	20.0		21.6	108	(50-130)
2-Hexanone	100		98.5	98.5	(65-154)
Isopropylbenzene	20.0		23.6	118	(73-129)
Methyl acetate	20.0		19.3	96.3	(70-130)
Methyl cyclohexane	20.0		23.8	119	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91	(69-115)
4-Methyl-2-Pentanone(MI	100		101	101	(71-146)
Methylene Chloride	20.0		19.6	97.9	(76-121)
Styrene	20.0		22.7	114	(79-123)
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		22.7	113	(72-124)
Toluene	20.0		21.6	108	(80-125)
1,2,3-Trichlorobenzene	20.0		19.9	99.4	(61-126)
1,2,4-Trichlorobenzene	20.0		20.6	103	(67-123)
1,1,1-Trichloroethane	20.0		19.5	97.3	(66-130)
1,1,2-Trichloroethane	20.0		20.4	102	(82-126)
Trichloroethene	20.0		19.3	96.5	(77-124)
Trichlorofluoromethane	20.0		18.7	93.7	(38-123)
Vinyl Chloride	20.0		18.9	94.6	(27-138)
o-Xylene	20.0		21.8	109	(79-124)
mp-Xylene	40.0		45.0	112	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2196949

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 15062505A.D Lab Sample ID: 2196949

Date Analyzed: 6/25/2015 Time Analyzed: 11:33

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2196950(LCS)	2196950	15062506A.D	11:51
TB-062415	2078952001	15062508.D	12:32
MRC-MW14B-062415	2078952002	15062509.D	12:49
MRC-MW12A-062415	2078952003	15062510.D	13:06
MRC-MW12B-062415	2078952004	15062511.D	13:23
MRC-MW14A-062415	2078952005	15062512.D	13:40

COMMENTS:

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2197921

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 515062703A.D Lab Sample ID: 2197921

Date Analyzed: 6/27/2015 Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms05.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2197922(LCS)	2197922	515062704A.D	11:38
MRC-MW14B-062415	2078952002	515062709.D	13:24
MRC-MW12A-062415	2078952003	515062710.D	13:45
MRC-MW12B-062415	2078952004	515062711.D	14:06

COMMENTS:

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 15061700.D BFB Injection Date: 6/17/2015

Instrument ID: ms15.i BFB Injection Time: 00:52

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.3
75	30.0 - 60.0% of mass 95	49.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.5(0.6) 1
174	50.0 - 100.0% of mass 95	81.2
175	5.0 - 9.0% of mass 174	5.5 (6.8) 1
176	95.0 - 101.0% of mass 174	77.3 (95.2) 1
177	5.0 - 9.0% of mass 176	4.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15061703.D	6/17/2015	01:45
1234	1234	15061704.D	6/17/2015	02:03
1235	1235	15061705.D	6/17/2015	02:20
1236	1236	15061706.D	6/17/2015	02:37
1237	1237	15061707.D	6/17/2015	02:54
1238	1238	15061708.D	6/17/2015	03:11
1239	1239	15061709.D	6/17/2015	03:28
2192681(LCS)	2192681	15061714A.D	6/17/2015	04:54

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 515061700.D BFB Injection Date: 6/17/2015

Instrument ID: ms05.i BFB Injection Time: 10:58

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.0
75	30.0 - 60.0% of mass 95	45.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.4(0.5) 1
174	50.0 - 100.0% of mass 95	93.2
175	5.0 - 9.0% of mass 174	6.7 (7.2) 1
176	95.0 - 101.0% of mass 174	91.4 (98.1) 1
177	5.0 - 9.0% of mass 176	5.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	515061704.D	6/17/2015	12:20
1234	1234	515061705.D	6/17/2015	12:41
1235	1235	515061706.D	6/17/2015	13:02
1236	1236	515061707.D	6/17/2015	13:23
1237	1237	515061708.D	6/17/2015	13:44
1238	1238	515061709.D	6/17/2015	14:05
1239	1239	515061710.D	6/17/2015	14:27
2193058(LCS)	2193058	515061714.D	6/17/2015	15:51

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 15062500.D BFB Injection Date: 6/25/2015

Instrument ID: ms15.i BFB Injection Time: 09:17

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.3
75	30.0 - 60.0% of mass 95	49.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.6(0.8) 1
174	50.0 - 100.0% of mass 95	78.7
175	5.0 - 9.0% of mass 174	5.9 (7.5) 1
176	95.0 - 101.0% of mass 174	75.6 (96.0) 1
177	5.0 - 9.0% of mass 176	4.8 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15062502.D	6/25/2015	10:32
2196949(MB)	2196949	15062505A.D	6/25/2015	11:33
2196950(LCS)	2196950	15062506A.D	6/25/2015	11:51
TB-062415	2078952001	15062508.D	6/25/2015	12:32
MRC-MW14B-062415	2078952002	15062509.D	6/25/2015	12:49
MRC-MW12A-062415	2078952003	15062510.D	6/25/2015	13:06
MRC-MW12B-062415	2078952004	15062511.D	6/25/2015	13:23
MRC-MW14A-062415	2078952005	15062512.D	6/25/2015	13:40

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-046

Lab File ID: 515062700.D BFB Injection Date: 6/27/2015

Instrument ID: ms05.i BFB Injection Time: 10:06

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.0
75	30.0 - 60.0% of mass 95	44.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.5) 1
174	50.0 - 100.0% of mass 95	97.0
175	5.0 - 9.0% of mass 174	7.5 (7.8) 1
176	95.0 - 101.0% of mass 174	93.8 (96.8) 1
177	5.0 - 9.0% of mass 176	6.0 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	515062701.D	6/27/2015	10:28
2197921(MB)	2197921	515062703A.D	6/27/2015	11:17
2197922(LCS)	2197922	515062704A.D	6/27/2015	11:38
MRC-MW14B-062415	2078952002	515062709.D	6/27/2015	13:24
MRC-MW12A-062415	2078952003	515062710.D	6/27/2015	13:45
MRC-MW12B-062415	2078952004	515062711.D	6/27/2015	14:06

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	0.02507	0.02334	0.02317	0.02184	0.02219	A
Acrolein	0.03677	0.04060	0.04258	0.04093	0.04220	A
Acrylonitrile	0.08402	0.09205	0.09453	0.09133	0.09679	A
Acetonitrile	0.03282	0.03230	0.03213	0.02996	0.03045	A
tert-Amyl Ethylether	22741	138762	672896	1832909	4047470	L
tert-Amyl methyl ether	29873	188554	906087	2372245	5162042	L
tert-Amyl Alcohol	0.01247	0.01261	0.01380	0.01393	0.01537	A
Benzene	103359	424102	1735184	4338872	9005639	Q
Benzyl Chloride	2094	12683	70744	238711	621845	Q
Bromobenzene	0.75395	0.94739	0.95603	0.95495	0.99381	A
Bromochloromethane	0.15660	0.16529	0.16689	0.16066	0.16756	A
Bromodichloromethane	0.32496	0.38097	0.39685	0.41006	0.43669	A
Bromoform *	6702	42582	205685	590101	1338449	L
Bromomethane	16816	77251	278279	593338	1173569	L
2-Butanone	0.02595	0.03117	0.03530	0.03432	0.03630	A
tert.- Butyl Alcohol	0.02159	0.02377	0.02373	0.02254	0.02338	A
tert-Butylbenzene	9957	71591	371476	988847	2105157	L
n-Butylbenzene	8080	65090	373513	1006472	2184294	L
sec-Butylbenzene	44546	364243	1904166	5053889	10807720	Q
Carbon Disulfide	0.66159	0.72702	0.75490	0.76077	0.80295	A
Carbon Tetrachloride	0.32306	0.38348	0.40778	0.40976	0.43059	A
Chloroacetonitrile	1406	8784	52280	132698	291963	Q
Chlorobenzene *	1.92656	2.22473	2.20500	2.18123	2.28177	A
1-Chlorobutane	0.26729	0.31728	0.31989	0.30694	0.31487	A
Chlorodibromomethane	12127	80799	381363	1028927	2295593	L
Chloroethane	0.25384	0.23902	0.23385	0.22292	0.22950	A
2-Chloroethylvinyl ether		440	2097	6156	13732	L
Chloroform **	57578	226212	853074	2065517	4246117	L
1-Chlorohexane	14828	94690	492720	1347225	2932385	L
Chloromethane *	0.42476	0.39743	0.38966	0.38053	0.39124	A
Chloroprene	0.39568	0.45325	0.45466	0.44269	0.46171	A
3-Chloro-1-propene	0.35189	0.38045	0.38182	0.37215	0.37364	A
o-Chlorotoluene	43016	301322	1479075	3859474	8261084	L
p-Chlorotoluene	35665	276208	1347932	3560535	7662785	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.37625	0.41344	0.44483	0.43515	0.45311	A
1,2-Dibromo-3-Chloropropane	0.11961	0.11106	0.11595	0.12692	0.14056	A
1,2-Dibromoethane	0.52535	0.58757	0.60247	0.61969	0.66595	A
Dibromomethane	0.15992	0.19123	0.18957	0.18516	0.19268	A
trans-1,4-Dichloro-2-butene	3065	19337	98908	270193	601570	L
1,2-Dichlorobenzene	1.40812	1.69443	1.67721	1.69477	1.78481	A
1,3-Dichlorobenzene	1.53586	1.82869	1.77292	1.78074	1.87441	A
1,4-Dichlorobenzene	1.70098	1.92429	1.82097	1.81702	1.91248	A
Dichlorodifluoromethane	0.44177	0.45472	0.46139	0.43133	0.44381	A
1,1-Dichloroethane *	0.50916	0.58977	0.57331	0.54843	0.56945	A
1,2-Dichloroethene, Total	44995	267877	1119957	2758733	5729991	L
1,2-Dichloroethane	0.37799	0.42508	0.42754	0.40766	0.41962	A
1,1-Dichloroethene **	0.37625	0.42406	0.42498	0.39977	0.40766	A
cis-1,2-Dichloroethene	0.36831	0.41527	0.41496	0.40417	0.42714	A
trans-1,2-Dichloroethene	0.36468	0.42529	0.41726	0.39542	0.40230	A
Dichlorofluoromethane	0.52244	0.59289	0.58106	0.55137	0.55851	A
1,1-Dichloro-2-Propanone	896	6523	33360	89811	196476	Q
2,2-Dichloropropane	0.30426	0.35709	0.36983	0.36951	0.39463	A
1,3-Dichloropropane	0.96935	1.12545	1.13514	1.13830	1.20075	A
1,2-Dichloropropane **	0.28469	0.30291	0.30773	0.30613	0.32547	A
1,1-Dichloropropene	0.35398	0.41365	0.43150	0.42552	0.44569	A
cis-1,3-Dichloropropene	18547	120669	571932	1608946	3565045	L
trans-1,3-Dichloropropene	15661	104544	528288	1450653	3188318	L
1,3-Dichloropropene, Total	34208	225213	1100220	3059599	6753363	L
Diisobutylene	91501	257478	952993	2315173	4785320	L
Diisopropyl ether	0.80322	0.92390	0.89531	0.87588	0.90990	A
1,4-Dioxane	0.00255	0.00258	0.00291	0.00290	0.00316	A
Ethyl Acetate	0.18653	0.20186	0.23460	0.23042	0.24654	A
Ethyl ether	0.16721	0.19249	0.18722	0.18479	0.18669	A
Ethyl Methacrylate	11715	82944	450569	1254130	2783565	L
Ethyl tert-butyl ether	0.67847	0.74178	0.81376	0.81006	0.87182	A
Ethylbenzene **	1.03687	1.11214	1.14985	1.14492	1.21224	A
Freon 113	0.26177	0.28269	0.27814	0.26021	0.25571	A
Heptane	0.13853	0.16992	0.19290	0.19392	0.20227	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	0.41907	0.43372	0.42858	0.42003	0.44537	A
Hexachloroethane	0.39029	0.45002	0.47522	0.50598	0.56683	A
Hexane	0.52980	0.53574	0.53209	0.50979	0.51266	A
2-Hexanone	29277	192755	1076958	2872978	6203831	L
Iodomethane	2975	13842	114181	432168	1010714	Q
Isobutyl alcohol	3822	32360	152753	415393	901137	Q
Isopropyl Alcohol	0.01945	0.01582	0.01553	0.01461	0.01526	A
Isopropylbenzene	48137	354658	1833991	4951852	10563227	Q
p-Isopropyltoluene	9262	78532	426539	1140979	2478520	L
Methyl acetate	0.04754	0.04623	0.04912	0.04500	0.04599	A
Methyl acrylate	0.18560	0.20028	0.22835	0.23127	0.24917	A
Methacrylonitrile	6408	36122	155762	404529	839179	L
Methyl cyclohexane	0.90948	1.09199	1.12914	1.13124	1.18516	A
Methyl methacrylate	8753	50910	252756	710623	1572191	L
Methyl t-Butyl Ether	0.74363	0.76938	0.76361	0.75248	0.77272	A
4-Methyl-2-Pentanone(MIBK)	43813	308113	1606931	4244097	8906316	Q
Methylene Chloride	40654	132687	456467	1078930	2168780	Q
Naphthalene	25790	146929	923995	2897431	6727355	L
Nitrobenzene	4130	22792	114810	387309	1110457	Q
2-Nitropropane	10495	68671	361215	1018389	2245996	L
Octane	6369	36815	195993	529117	1120645	L
Pentachloroethane	0.50459	0.57042	0.60403	0.61973	0.65932	A
Pentane	0.23108	0.22058	0.20801	0.19152	0.18515	A
n-Propanol	0.01928	0.02112	0.02032	0.01934	0.01967	A
Propionitrile	0.03333	0.03673	0.03621	0.03599	0.03772	A
n-Propylbenzene	12979	99529	530028	1381579	2930659	L
Styrene	30692	226841	1230222	3277954	7024028	L
1,1,1,2-Tetrachloroethane	0.59718	0.72183	0.73006	0.74378	0.80179	A
1,1,2,2-Tetrachloroethane *	0.84836	0.93861	0.87130	0.85379	0.88224	A
Tetrachloroethene	0.71787	0.80554	0.72247	0.69472	0.71816	A
Tetrahydrofuran	0.05356	0.06076	0.06919	0.06938	0.07334	A
Toluene **	45665	233654	1065063	2729493	5727390	L
Total Xylenes	1.08494	1.23911	1.34777	1.39212	1.48760	A
1,2,3-Trichlorobenzene	12813	87607	472374	1261730	2786157	L

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	14640	96109	510146	1412214	3144448	L
1,1,1-Trichloroethane	0.39967	0.45271	0.47262	0.45997	0.48400	A
1,1,2-Trichloroethane	0.52978	0.56443	0.56135	0.55147	0.57559	A
Trichloroethene	0.30742	0.32790	0.33334	0.32379	0.33408	A
Trichlorofluoromethane	0.52837	0.54294	0.55041	0.52067	0.53606	A
1,2,3-Trichloropropane	0.24969	0.29206	0.26739	0.27365	0.27579	A
1,2,4-Trimethylbenzene	41067	306267	1619953	4272767	9084125	Q
1,3,5-Trimethylbenzene	37665	302158	1584646	4176659	8864167	Q
Vinyl Acetate	3005	16185	82282	209518	459211	L
Vinyl Chloride **	0.34961	0.37934	0.37926	0.36707	0.38513	A
o-Xylene	22830	140070	707366	1934520	4187404	L
mp-Xylene	1.15481	1.30896	1.39176	1.41500	1.49864	A
4-Bromofluorobenzene	0.84731	0.82265	0.81238	0.83875	0.90207	A
Dibromofluoromethane	0.29142	0.28364	0.29187	0.28798	0.30440	A
1,2-Dichloroethane-d4	0.37051	0.35097	0.32783	0.32123	0.32437	A
Toluene-d8	2.32729	2.29567	2.40572	2.46188	2.68419	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	0.02116			A		0.022800		6.06654
Acrolein	0.04020	0.03659		A		0.039980		6.02969
Acrylonitrile	0.09500	0.07674		A		0.090060		7.96944
Acetonitrile	0.02921			A		0.031150		4.70005
tert-Amyl Ethylether	8956369	10747		L	0.000000	1.680340		0.99853
tert-Amyl methyl ether	11225678	13769		L	0.000000	1.333790		0.99926
tert-Amyl Alcohol	0.01629	0.01018		A		0.013520		14.92461
Benzene	14606763	80502		Q	0.000000	1.505570	-0.077680	0.99782
Benzyl Chloride	1499368			Q	0.000000	0.179470	0.012180	0.99856
Bromobenzene	0.95977	0.77894		A		0.906410		10.70370
Bromochloromethane	0.15341	0.15322		A		0.160520		3.87524
Bromodichloromethane	0.43428	0.31776		A		0.385940		12.51791
Bromoform *	3001900	3247		L	0.000000	1.956410		0.99758
Bromomethane	2347203			L	0.000000	6.202210		0.99655
2-Butanone	0.03564			A		0.033110		11.91075
tert.- Butyl Alcohol	0.02352			A		0.023090		3.72001
tert-Butylbenzene	4364529	5530		L	0.000000	1.315600		0.99955
n-Butylbenzene	4513403			L	0.000000	1.272610		0.99926
sec-Butylbenzene	15462550	22356		Q	0.000000	4.828710	-0.319170	0.99482
Carbon Disulfide	0.77142	0.71707		A		0.742250		6.12739
Carbon Tetrachloride	0.42668	0.32919		A		0.387220		11.48542
Chloroacetonitrile	648017			Q	0.000000	0.018810	0.000070	0.99971
Chlorobenzene *	2.09700	1.96426		A		2.125790		6.37170
1-Chlorobutane	0.30241	0.30853		A		0.305320		5.84950
Chlorodibromomethane	5016674	6442		L	0.000000	1.232740		0.99844
Chloroethane	0.19736			A		0.229410		8.22040
2-Chloroethylvinyl ether	51100			L	0.562240	287		0.95525
Chloroform **	8733761	41558		L	0.000000	1.684710		0.99936
1-Chlorohexane	6333781	8275		L	0.000000	0.972630		0.99903
Chloromethane *	0.36963			A		0.392210		4.75652
Chloroprene	0.45631	0.40131		A		0.437940		6.29968
3-Chloro-1-propene	0.33984	0.36098		A		0.365830		4.27003
o-Chlorotoluene	15410966	21209		L	0.000000	0.362590		0.99424
p-Chlorotoluene	13775085	18700		Q	0.000000	3.077270	-0.102250	0.99849
Cyclohexane	0.44896	0.40588		A		0.425370		6.60473
1,2-Dibromo-3-Chloropropane	0.14476	0.09802		A		0.122410		13.43355

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.66482	0.48333		A		0.592740		11.50732
Dibromomethane	0.18756	0.16352		A		0.181380		7.54534
trans-1,4-Dichloro-2-butene	1303209	1436		L	0.000000	4.464570		0.99899
1,2-Dichlorobenzene	1.72643	1.47881		A		1.637800		8.47145
1,3-Dichlorobenzene	1.81479	1.55576		A		1.737600		7.78698
1,4-Dichlorobenzene	1.83996	1.73546		A		1.821590		4.54522
Dichlorodifluoromethane	0.42949			A		0.443750		2.83846
1,1-Dichloroethane *	0.55214	0.51336		A		0.550800		5.50475
1,2-Dichloroethene, Total	11800793	23804		L	0.000000	2.496480		0.99949
1,2-Dichloroethane	0.40050	0.36517		A		0.403360		5.94441
1,1-Dichloroethene **	0.38912	0.39416		A		0.402280		4.47187
cis-1,2-Dichloroethene	0.41507	0.37579		A		0.402960		5.51861
trans-1,2-Dichloroethene	0.37874	0.39027		A		0.396280		5.31466
Dichlorofluoromethane	0.53182	0.50397		A		0.548870		5.79912
1,1-Dichloro-2-Propanone	441766			Q	-0.002770	0.012890	0.000050	0.99982
2,2-Dichloropropane	0.39488	0.34705		A		0.362460		8.61041
1,3-Dichloropropane	1.18926	1.02796		A		1.112320		7.58131
1,2-Dichloropropane **	0.31997	0.26518		A		0.301730		6.87192
1,1-Dichloropropene	0.43693	0.35651		A		0.409110		9.31284
cis-1,3-Dichloropropene	7800084	9134		L	0.000000	0.793020		0.99839
trans-1,3-Dichloropropene	6934358	7294		L	0.000000	0.890300		0.99874
1,3-Dichloropropene, Total	14734442	16428		L	0.000000	0.838840		0.99856
Diisobutylene	10021406	79158		L	0.000000	1.475300		0.99965
Diisopropyl ether	0.83024	0.77001		A		0.858350		6.76990
1,4-Dioxane	0.00313			A		0.002870		9.14435
Ethyl Acetate	0.24526	0.18350		A		0.218390		12.43907
Ethyl ether	0.17840	0.17661		A		0.181920		4.64240
Ethyl Methacrylate	6020892	5422		L	0.000000	1.024640		0.99861
Ethyl tert-butyl ether	0.83962	0.66275		A		0.774040		10.45545
Ethylbenzene **	1.18822	1.23715		A		1.154480		5.81553
Freon 113	0.24886	0.26161		A		0.264140		4.56381
Heptane	0.20066	0.14839		A		0.178090		14.63829
Hexachlorobutadiene	0.43660	0.37835		A		0.423100		5.15004
Hexachloroethane	0.57928	0.43133		A		0.485560		14.36565
Hexane	0.48619	0.56672		A		0.524710		4.80767
2-Hexanone	12373966	14477		L	0.000000	2.439590		0.99858

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	2091300	1667		Q	0.000000	0.134620	0.001030	0.99742
Isobutyl alcohol	1992005	1623		Q	0.000000	0.012170	0.000020	0.99979
Isopropyl Alcohol	0.01487			A		0.015920		11.18158
Isopropylbenzene	15478189	24177		Q	0.000000	4.674960	-0.295890	0.99530
p-Isopropyltoluene	5142474	4687		L	0.000000	1.118050		0.99941
Methyl acetate	0.04452	0.05780		A		0.048030		9.53257
Methyl acrylate	0.24715	0.17803		A		0.217120		13.37554
Methacrylonitrile	1755991	3184		L	0.000000	8.425490		0.99974
Methyl cyclohexane	1.17562	0.96228		A		1.083560		9.84166
Methyl methacrylate	3400626	4816		L	0.000000	4.403130		0.99887
Methyl t-Butyl Ether	0.75036	0.77722		A		0.761340		1.66532
4-Methyl-2-Pentanone(MIBK)	14745792	19946		Q	0.000000	0.701480	-0.006490	0.99771
Methylene Chloride	4409137	27806		Q	0.011170	0.320710	-0.003840	0.99990
Naphthalene	13152896	16288		L	0.000000	0.432610		0.99657
Nitrobenzene	3111869	2683		Q	0.000000	0.025280	0.000430	0.99930
2-Nitropropane	4892772	5704		L	0.000000	6.313580		0.99854
Octane	2369746	2719		L	0.000000	2.582550		0.99960
Pentachloroethane	0.66846	0.48488		A		0.587350		12.18267
Pentane	0.17668			A		0.202170		10.52105
n-Propanol	0.01819			A		0.019660		5.07223
Propionitrile	0.03676	0.03084		A		0.035370		6.83922
n-Propylbenzene	6077490	6623		L	0.000000	0.944530		0.99959
Styrene	13282869	15148		L	0.000000	0.422340		0.99539
1,1,1,2-Tetrachloroethane	0.79831	0.62064		A		0.716230		11.16188
1,1,2,2-Tetrachloroethane *	0.85742	0.81829		A		0.867140		4.30617
Tetrachloroethene	0.69520	0.80321		A		0.736740		6.44984
Tetrahydrofuran	0.07268			A		0.066490		11.66503
Toluene **	11655491	32876		L	0.000000	0.519610		0.99934
Total Xylenes	1.26961	1.37325		A		1.313490		9.87473
1,2,3-Trichlorobenzene	5879797	7028		L	0.000000	0.982760		0.99936
1,2,4-Trichlorobenzene	6790089	7851		L	0.000000	0.856310		0.99899
1,1,1-Trichloroethane	0.47546	0.40333		A		0.449680		7.66744
1,1,2-Trichloroethane	0.56329	0.50161		A		0.549650		4.65046
Trichloroethene	0.32478	0.34103		A		0.327480		3.26314
Trichlorofluoromethane	0.51059			A		0.531510		2.75664
1,2,3-Trichloropropane	0.27009	0.22804		A		0.265250		7.78047

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15061704.D RRF005 = 15061705.D RRF020 = 15061706.D RRF050 = 15061707.D

RRF100 = 15061708.D RRF200 = 15061709.D RRF00.5 = 15061703.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	14681987	25018		Q	0.000000	3.867170	-0.196440	0.99734
1,3,5-Trimethylbenzene	14397053	19894		Q	0.000000	3.768310	-0.189110	0.99747
Vinyl Acetate	970612	1273		L	0.000000	15.323330		0.99944
Vinyl Chloride **	0.37145			A		0.371980		3.41071
o-Xylene	8835464	12191		L	0.000000	0.693120		0.99935
mp-Xylene	1.18185	1.55566		A		1.358100		11.16539
4-Bromofluorobenzene	0.88254	1.09949		A		0.886460		11.18732
Dibromofluoromethane	0.29454			A		0.292310		2.39930
1,2-Dichloroethane-d4	0.31275			A		0.334610		6.49884
Toluene-d8	2.26660	2.79385		A		2.462170		8.23471

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	5189	23501	92699	207550	385918	L
Acrolein	0.02419	0.02459	0.02781	0.02576	0.02435	A
Acrylonitrile	0.05750	0.05912	0.06437	0.05844	0.05530	A
Acetonitrile	0.01483	0.01403	0.01489	0.01226	0.01242	A
tert-Amyl Ethylether	0.39828	0.42448	0.48868	0.46437	0.46369	A
tert-Amyl methyl ether	0.50136	0.53719	0.62123	0.59195	0.58030	A
tert-Amyl Alcohol	0.00815	0.00852	0.00887	0.00873	0.00861	A
Benzene	0.89493	0.88507	0.95466	0.90300	0.86696	A
Benzyl Chloride	4880	25691	122746	314087	628985	Q
Bromobenzene	0.57356	0.60842	0.67034	0.65302	0.63452	A
Bromochloromethane	0.13057	0.12808	0.14630	0.13583	0.12590	A
Bromodichloromethane	0.29270	0.30082	0.33465	0.31497	0.31170	A
Bromoform *	0.31385	0.33989	0.39101	0.38576	0.37997	A
Bromomethane	5804	31566	150768	338923	776740	Q
2-Butanone	0.02083	0.02053	0.02082	0.01917	0.01846	A
tert.- Butyl Alcohol	0.00932	0.00914	0.01031	0.00902	0.00893	A
tert-Butylbenzene	0.35705	0.39961	0.44817	0.48151	0.47550	A
n-Butylbenzene	12815	72686	319615	899233	1801004	Q
sec-Butylbenzene	1.78130	2.01843	2.26198	2.44091	2.37793	A
Carbon Disulfide	0.64126	0.63809	0.69082	0.65352	0.62186	A
Carbon Tetrachloride	0.29623	0.30237	0.33160	0.34047	0.33527	A
Chloroacetonitrile	749	5271	23498	57491	117591	L
Chlorobenzene *	1.54831	1.56818	1.69826	1.65753	1.60902	A
1-Chlorobutane	0.17146	0.18240	0.19360	0.19025	0.18474	A
Chlorodibromomethane	0.55168	0.57768	0.66464	0.64816	0.64949	A
Chloroethane	0.14296	0.13299	0.15280	0.13614	0.13584	A
2-Chloroethylvinyl ether	7002	39556	187351	461194	899068	L
Chloroform **	51177	168998	631374	1465064	2812287	Q
1-Chlorohexane	0.63141	0.65130	0.73219	0.83483	0.83034	A
Chloromethane *	0.22019	0.20780	0.23607	0.21037	0.20466	A
Chloroprene	0.25359	0.27712	0.31094	0.30506	0.29516	A
3-Chloro-1-propene	0.24557	0.25039	0.26920	0.24502	0.22584	A
o-Chlorotoluene	1.35170	1.52739	1.67547	1.65528	1.61059	A
p-Chlorotoluene	1.26429	1.43883	1.55540	1.55712	1.49940	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.28268	0.28893	0.31738	0.34833	0.34182	A
1,2-Dibromo-3-Chloropropane	0.06448	0.07309	0.07546	0.07492	0.07533	A
1,2-Dibromoethane	0.46027	0.46833	0.53100	0.50793	0.50105	A
Dibromomethane	0.13127	0.13509	0.15172	0.14244	0.13886	A
trans-1,4-Dichloro-2-butene	0.09351	0.10139	0.11463	0.10680	0.10233	A
1,2-Dichlorobenzene	0.95369	0.98524	1.10640	1.07682	1.05790	A
1,3-Dichlorobenzene	1.06523	1.10282	1.20225	1.17627	1.15209	A
1,4-Dichlorobenzene	1.12417	1.10341	1.20630	1.18206	1.15179	A
Dichlorodifluoromethane	0.30923	0.29365	0.31146	0.28566	0.27795	A
1,1-Dichloroethane *	0.37691	0.39276	0.41905	0.39331	0.38047	A
1,2-Dichloroethene, Total	0.28624	0.28558	0.31110	0.29154	0.28256	A
1,2-Dichloroethane	0.25563	0.26465	0.28466	0.26529	0.25699	A
1,1-Dichloroethene **	0.28661	0.28400	0.30638	0.29553	0.28490	A
cis-1,2-Dichloroethene	0.28674	0.28643	0.31276	0.29199	0.28447	A
trans-1,2-Dichloroethene	0.28574	0.28473	0.30945	0.29108	0.28065	A
Dichlorofluoromethane	0.35931	0.38386	0.42648	0.39701	0.38556	A
1,1-Dichloro-2-Propanone	584	4110	21368	53443	107308	L
2,2-Dichloropropane	0.28444	0.28219	0.31716	0.31358	0.30610	A
1,3-Dichloropropane	0.75202	0.75147	0.83507	0.78399	0.77000	A
1,2-Dichloropropane **	0.21573	0.20821	0.23409	0.22302	0.21588	A
1,1-Dichloropropene	0.28877	0.29841	0.32353	0.32261	0.31592	A
cis-1,3-Dichloropropene	0.74378	0.78161	0.89721	0.87040	0.87609	A
trans-1,3-Dichloropropene	0.60071	0.68832	0.78073	0.74785	0.74455	A
1,3-Dichloropropene, Total	0.67225	0.73496	0.83897	0.80913	0.81032	A
Diisobutylene	88537	200755	670782	1940763	3850801	L
Diisopropyl ether	0.53715	0.55781	0.62681	0.59146	0.57391	A
1,4-Dioxane	1303	5054	17330	43348	72318	Q
Ethyl Acetate	0.13684	0.13402	0.15596	0.14270	0.14109	A
Ethyl ether	0.12614	0.12428	0.13898	0.13101	0.12561	A
Ethyl Methacrylate	0.48109	0.54433	0.63767	0.62089	0.61255	A
Ethyl tert-butyl ether	0.52715	0.56113	0.63776	0.59764	0.58096	A
Ethylbenzene **	0.73976	0.78710	0.85629	0.86225	0.85062	A
Freon 113	0.19158	0.18736	0.20610	0.22097	0.21552	A
Heptane	7962	45029	168369	603546	1245892	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	8423	46826	190332	582296	1183754	L
Hexachloroethane	0.33872	0.33922	0.37237	0.39803	0.40484	A
Hexane	0.34953	0.33241	0.36853	0.39928	0.39283	A
2-Hexanone	0.20128	0.21941	0.24919	0.23313	0.22292	A
Iodomethane	1346	7500	60095	258428	610579	Q
Isobutyl alcohol	0.00184	0.00188	0.00153	0.00142	0.00154	A
Isopropyl Alcohol	2043	7871	29538	63392	116415	L
Isopropylbenzene	1.77677	1.95600	2.20129	2.30984	2.21546	A
p-Isopropyltoluene	13494	81683	365094	1001889	1975991	L
Methyl acetate	0.02535	0.03035	0.03325	0.03119	0.02943	A
Methyl acrylate	0.13284	0.14783	0.16736	0.15939	0.15307	A
Methacrylonitrile	0.07680	0.07903	0.08605	0.07826	0.07560	A
Methyl cyclohexane	0.75386	0.75682	0.81697	0.96965	0.98329	A
Methyl methacrylate	0.12717	0.12008	0.14212	0.13619	0.13350	A
Methyl t-Butyl Ether	0.53144	0.54462	0.61294	0.57690	0.55610	A
4-Methyl-2-Pentanone(MIBK)	0.30127	0.32893	0.36481	0.33846	0.32080	A
Methylene Chloride	32521	94191	342285	786578	1517987	Q
Naphthalene	33201	190563	942576	2405789	4706191	L
Nitrobenzene	4292	22428	109967	320245		Q
2-Nitropropane	0.07022	0.07142	0.08438	0.08341	0.08351	A
Octane	7721	34375	119306	463920	965754	Q
Pentachloroethane	0.33539	0.35230	0.37960	0.38430	0.39848	A
Pentane	8544	33657	145799	405666	798949	L
n-Propanol	0.01063	0.01030	0.01089	0.01020	0.00952	A
Propionitrile	0.01970	0.02050	0.02193	0.02015	0.01892	A
n-Propylbenzene	0.48533	0.58390	0.64772	0.67462	0.65907	A
Styrene	1.13024	1.29062	1.47234	1.47818	1.42183	A
1,1,1,2-Tetrachloroethane	0.52521	0.55149	0.61228	0.60802	0.60125	A
1,1,2,2-Tetrachloroethane *	0.46125	0.46384	0.49839	0.47127	0.45159	A
Tetrachloroethene	0.57911	0.58315	0.62432	0.63945	0.62716	A
Tetrahydrofuran	0.04084	0.04128	0.04402	0.03981	0.03729	A
Toluene **	1.21744	1.27858	1.42056	1.39912	1.36872	A
Total Xylenes	0.87748	0.93651	1.04250	1.04741	1.02524	A
1,2,3-Trichlorobenzene	0.48456	0.54589	0.62796	0.64200	0.64568	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	0.57742	0.60746	0.71083	0.74801	0.75669	A
1,1,1-Trichloroethane	0.32351	0.33233	0.36233	0.35697	0.35118	A
1,1,2-Trichloroethane	0.37703	0.38738	0.41557	0.39196	0.38115	A
Trichloroethene	0.24451	0.24811	0.26364	0.25333	0.24591	A
Trichlorofluoromethane	0.40012	0.38630	0.44318	0.40406	0.40384	A
1,2,3-Trichloropropane	0.14024	0.15021	0.15310	0.14796	0.14051	A
1,2,4-Trimethylbenzene	1.39646	1.65681	1.86275	1.88032	1.83006	A
1,3,5-Trimethylbenzene	1.43581	1.62260	1.82876	1.87600	1.80613	A
Vinyl Acetate	2164	12421	60692	148973	299342	L
Vinyl Chloride **	0.21389	0.20949	0.24660	0.21151	0.21037	A
o-Xylene	0.82841	0.91058	1.02816	1.03941	1.03147	A
mp-Xylene	0.90201	0.94947	1.04968	1.05142	1.02212	A
4-Bromofluorobenzene	0.56864	0.61162	0.69064	0.63333	0.63966	A
Dibromofluoromethane	0.21700	0.23080	0.25856	0.23067	0.23274	A
1,2-Dichloroethane-d4	0.20647	0.22674	0.23860	0.21375	0.21181	A
Toluene-d8	1.80861	1.94973	2.19725	2.00830	2.02186	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	774889	2863		L	0.000000	87.493713		0.99907
Acrolein	0.02436	0.02168		A		0.024680		7.47910
Acrylonitrile	0.05559	0.04496		A		0.056470		10.45215
Acetonitrile	0.01237	0.01200		A		0.013260		9.64170
tert-Amyl Ethylether	0.47663	0.37125		A		0.441050		9.95464
tert-Amyl methyl ether	0.59118	0.45151		A		0.553530		10.83738
tert-Amyl Alcohol	0.00906	0.00653		A		0.008350		10.22202
Benzene	0.83748	0.86699		A		0.887010		4.15630
Benzyl Chloride	1346730			Q	0.000000	0.180030	0.003510	0.99996
Bromobenzene	0.65112	0.57370		A		0.623530		6.26318
Bromochloromethane	0.12212	0.11892		A		0.129670		7.07206
Bromodichloromethane	0.31967	0.32621		A		0.314390		4.57314
Bromoform *	0.39517	0.27974		A		0.355060		12.62982
Bromomethane	1895557			Q	0.002560	0.088610	0.007500	0.99979
2-Butanone	0.01896	0.01931		A		0.019720		4.95082
tert.- Butyl Alcohol	0.00915	0.00897		A		0.009490		8.17088
tert-Butylbenzene	0.49070	0.33919		A		0.427390		14.54346
n-Butylbenzene	3742388	6692		Q	-0.012560	0.531860	0.005340	0.99992
sec-Butylbenzene	2.13383	1.78692		A		2.114470		12.59614
Carbon Disulfide	0.61695	0.61637		A		0.639840		4.12992
Carbon Tetrachloride	0.34976	0.30994		A		0.323660		6.37695
Chloroacetonitrile	234728			L	0.000000	120		0.99977
Chlorobenzene *	1.61607	1.52527		A		1.603230		3.81955
1-Chlorobutane	0.18993	0.19330		A		0.186520		4.20298
Chlorodibromomethane	0.68610	0.47924		A		0.608140		12.25243
Chloroethane	0.13501	0.15148		A		0.141030		5.81365
2-Chloroethylvinyl ether	1868277	3239		L	0.000000	7.345610		0.99972
Chloroform **	5720226	34794		Q	0.017340	0.411980	0.000680	0.99986
1-Chlorohexane	0.89686	0.65763		A		0.747790		14.21919
Chloromethane *	0.20733	0.23014		A		0.216650		5.71502
Chloroprene	0.30099	0.27254		A		0.287910		7.20039
3-Chloro-1-propene	0.20908	0.22510		A		0.238600		8.34996
o-Chlorotoluene	1.59161	1.44856		A		1.551510		7.55031
p-Chlorotoluene	1.49124	1.28610		A		1.441770		8.38653
Cyclohexane	0.34909	0.29992		A		0.318310		8.95296
1,2-Dibromo-3-Chloropropane	0.07887	0.08087		A		0.074720		6.98758

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.52200	0.38984		A		0.482920		10.06779
Dibromomethane	0.14410	0.13283		A		0.139470		5.16430
trans-1,4-Dichloro-2-butene	0.10550	0.08981		A		0.101990		8.16460
1,2-Dichlorobenzene	1.08345	1.01386		A		1.039620		5.42755
1,3-Dichlorobenzene	1.18157	1.04482		A		1.132150		5.42889
1,4-Dichlorobenzene	1.17071	1.14056		A		1.154140		3.05036
Dichlorodifluoromethane	0.28081	0.30556		A		0.294900		4.72685
1,1-Dichloroethane *	0.38330	0.36245		A		0.386890		4.55259
1,2-Dichloroethene, Total	0.28814	0.28184		A		0.289570		3.46907
1,2-Dichloroethane	0.26156	0.22823		A		0.259570		6.47798
1,1-Dichloroethene **	0.28829	0.27194		A		0.288230		3.69264
cis-1,2-Dichloroethene	0.29080	0.30881		A		0.294570		3.88055
trans-1,2-Dichloroethene	0.28549	0.25488		A		0.284570		5.66728
Dichlorofluoromethane	0.38621	0.36088		A		0.385620		5.90099
1,1-Dichloro-2-Propanone	231142			L	0.000000	124		0.99739
2,2-Dichloropropane	0.31606	0.29117		A		0.301530		5.05653
1,3-Dichloropropane	0.79415	0.63563		A		0.760330		8.15740
1,2-Dichloropropane **	0.22179	0.19736		A		0.216580		5.38493
1,1-Dichloropropene	0.32506	0.28587		A		0.308600		5.54595
cis-1,3-Dichloropropene	0.91174	0.68814		A		0.824140		10.46293
trans-1,3-Dichloropropene	0.77232	0.59003		A		0.703500		11.31590
1,3-Dichloropropene, Total	0.84203	0.63909		A		0.763820		10.79016
Diisobutylene	7783339	72684		L	0.000000	1.754970		0.99969
Diisopropyl ether	0.57493	0.47859		A		0.562950		8.25658
1,4-Dioxane		524		Q	-0.000020	0.000580	1.783000	0.99959
Ethyl Acetate	0.14313	0.13908		A		0.141830		4.95279
Ethyl ether	0.12860	0.10415		A		0.125540		8.47511
Ethyl Methacrylate	0.63853	0.46539		A		0.571490		13.00959
Ethyl tert-butyl ether	0.58809	0.50414		A		0.570980		7.84840
Ethylbenzene **	0.87285	0.72633		A		0.813600		7.58343
Freon 113	0.22393	0.20173		A		0.206740		6.85765
Heptane	2613268	4401		Q	-0.009450	0.176390	0.002540	0.99936
Hexachlorobutadiene	2439793			L	0.000000	2.737930		0.99896
Hexachloroethane	0.43439	0.33793		A		0.375070		10.28305
Hexane	0.39869	0.37340		A		0.373520		6.87811
2-Hexanone	0.21949	0.17524		A		0.217240		10.85051

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane		545		Q	-0.004180	0.057810	0.010170	0.99794
Isobutyl alcohol	0.00158	0.00200		A		0.001680		12.95556
Isopropyl Alcohol	234301	1126		L	0.000000	289		0.99848
Isopropylbenzene	2.02676	1.80605		A		2.041740		10.21216
p-Isopropyltoluene	4107803	6886		L	0.000000	1.625780		0.99948
Methyl acetate	0.03032	0.02488		A		0.029250		10.48680
Methyl acrylate	0.15733	0.12046		A		0.148330		11.02651
Methacrylonitrile	0.07674	0.06586		A		0.076910		7.75931
Methyl cyclohexane	1.01625	0.83329		A		0.875730		12.71414
Methyl methacrylate	0.13781	0.11087		A		0.129680		8.50609
Methyl t-Butyl Ether	0.56289	0.52030		A		0.557880		5.52911
4-Methyl-2-Pentanone(MIBK)	0.31195	0.25517		A		0.317340		10.76257
Methylene Chloride	3098660	24748		Q	0.011580	0.219890	0.000820	0.99988
Naphthalene	9483114	15919		L	0.000000	0.698310		0.99995
Nitrobenzene		2768		Q	-0.000980	0.014690	0.000280	0.99990
2-Nitropropane	0.08807	0.05771		A		0.076960		14.12999
Octane	2022693	5077		Q	-0.018950	0.318650	0.006880	0.99907
Pentachloroethane	0.42137			A		0.378570		8.19848
Pentane	1575831	5686		L	0.000000	8.611580		0.99977
n-Propanol	0.00965	0.00792		A		0.009870		10.03471
Propionitrile	0.01863	0.01570		A		0.019360		10.06976
n-Propylbenzene	0.67142	0.52547		A		0.606790		12.60050
Styrene	1.41210	1.05873		A		1.323440		12.79824
1,1,1,2-Tetrachloroethane	0.63664	0.52723		A		0.580300		7.73368
1,1,2,2-Tetrachloroethane *	0.46120	0.42972		A		0.462470		4.46980
Tetrachloroethene	0.65704	0.62418		A		0.619200		4.59759
Tetrahydrofuran	0.03683	0.04017		A		0.040030		6.11695
Toluene **	1.40215	1.22182		A		1.329770		6.63444
Total Xylenes	1.02039	0.86727		A		0.973830		8.06091
1,2,3-Trichlorobenzene	0.66853	0.49169		A		0.586620		13.21516
1,2,4-Trichlorobenzene	0.78511	0.59746		A		0.683280		12.67834
1,1,1-Trichloroethane	0.36413	0.32138		A		0.344550		5.33392
1,1,2-Trichloroethane	0.40158	0.37893		A		0.390520		3.56911
Trichloroethene	0.25046	0.22780		A		0.247680		4.37083
Trichlorofluoromethane	0.38962	0.38999		A		0.402450		4.81105
1,2,3-Trichloropropane	0.14363	0.11680		A		0.141780		8.48571

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	1.76261	1.37879		A		1.681120		12.72370
1,3,5-Trimethylbenzene	1.75223	1.43932		A		1.680120		10.93504
Vinyl Acetate	631382	698		L	0.000000	21.848419		0.99928
Vinyl Chloride **	0.21411	0.22337		A		0.218480		6.05444
o-Xylene	1.06226	0.81957		A		0.959980		10.92472
mp-Xylene	0.99945	0.89112		A		0.980750		6.84224
4-Bromofluorobenzene	0.66505	0.65139		A		0.637190		6.14838
Dibromofluoromethane				A		0.233960		6.46544
1,2-Dichloroethane-d4		0.22348		A		0.220140		5.34635
Toluene-d8	2.00157	1.83756		A		1.974980		6.55687

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date/Time: 6/25/2015 10:32

Lab File ID: 15062502.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	0.0228	0.0188			-17.4	100.0	A
Acrolein	0.0400	0.0299			-25.2	100.0	A
Acrylonitrile	0.0901	0.0959			6.5	100.0	A
Acetonitrile	0.0312	0.0330			6.0	100.0	A
tert-Amyl Ethylether	50.0000		47.1639		-5.7	100.0	L
tert-Amyl methyl ether	50.0000		49.0142		-2.0	100.0	L
tert-Amyl Alcohol	0.0135	0.0153			12.9	100.0	A
Benzene	50.0000		48.8773		-2.2	100.0	Q
Benzyl Chloride	50.0000		50.2152		0.4	100.0	Q
Bromobenzene	0.9064	0.9959			9.9	100.0	A
Bromochloromethane	0.1605	0.1705			6.2	100.0	A
Bromodichloromethane	0.3859	0.4380			13.5	100.0	A
Bromoform	50.0000		45.8048	0.100	-8.4	100.0	L
Bromomethane	50.0000		48.4538		-3.1	100.0	L
2-Butanone	0.0331	0.0316			-4.7	100.0	A
tert.- Butyl Alcohol	0.0231	0.0223			-3.3	100.0	A
tert-Butylbenzene	50.0000		45.9824		-8.0	100.0	L
n-Butylbenzene	50.0000		43.6541		-12.7	100.0	L
sec-Butylbenzene	50.0000		40.5051		-19.0	100.0	Q
Carbon Disulfide	0.7423	0.6808			-8.3	100.0	A
Carbon Tetrachloride	0.3872	0.4165			7.6	100.0	A
Chloroacetonitrile	250		255		2.1	100.0	Q
Chlorobenzene	2.1258	2.2044		0.300	3.7	100.0	A
1-Chlorobutane	0.3053	0.3230			5.8	100.0	A
Chlorodibromomethane	50.0000		46.4244		-7.2	100.0	L
Chloroethane	0.2294	0.2118			-7.7	100.0	A
2-Chloroethylvinyl ether	50.0000		30.5519		-38.9	100.0	L
Chloroform	50.0000		54.1014		8.2	20.0	L
1-Chlorohexane	50.0000		42.8288		-14.3	100.0	L
Chloromethane	0.3922	0.4023		0.100	2.6	100.0	A
Chloroprene	0.4379	0.4729			8.0	100.0	A
3-Chloro-1-propene	0.3658	0.3194			-12.7	100.0	A
o-Chlorotoluene	50.0000		54.9284		9.9	100.0	L
p-Chlorotoluene	50.0000		49.5931		-0.8	100.0	Q
Cyclohexane	0.4254	0.4288			0.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date/Time: 6/25/2015 10:32

Lab File ID: 15062502.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.1224	0.1259			2.9	100.0	A
1,2-Dibromoethane	0.5927	0.6307			6.4	100.0	A
Dibromomethane	0.1814	0.1934			6.6	100.0	A
trans-1,4-Dichloro-2-butene	50.0000		49.9583		-0.1	100.0	L
1,2-Dichlorobenzene	1.6378	1.6873			3.0	100.0	A
1,3-Dichlorobenzene	1.7376	1.8118			4.3	100.0	A
1,4-Dichlorobenzene	1.8216	1.8278			0.3	100.0	A
Dichlorodifluoromethane	0.4437	0.4454			0.4	100.0	A
1,1-Dichloroethane	0.5508	0.5962		0.100	8.2	100.0	A
1,2-Dichloroethene, Total	100		101		0.9	100.0	L
1,2-Dichloroethane	0.4034	0.4304			6.7	100.0	A
1,1-Dichloroethene	0.4023	0.3776			-6.1	20.0	A
cis-1,2-Dichloroethene	0.4030	0.4474			11.0	100.0	A
trans-1,2-Dichloroethene	0.3963	0.3596			-9.2	100.0	A
Dichlorofluoromethane	0.5489	0.5425			-1.2	100.0	A
1,1-Dichloro-2-Propanone	250		247		-1.1	100.0	Q
2,2-Dichloropropane	0.3625	0.4212			16.2	100.0	A
1,3-Dichloropropane	1.1123	1.1744			5.6	100.0	A
1,2-Dichloropropane	0.3017	0.3361			11.4	20.0	A
1,1-Dichloropropene	0.4091	0.4575			11.8	100.0	A
cis-1,3-Dichloropropene	50.0000		47.5969		-4.8	100.0	L
trans-1,3-Dichloropropene	50.0000		47.1506		-5.7	100.0	L
1,3-Dichloropropene, Total	100		94.7475		-5.3	100.0	L
Diisobutylene	50.0000		45.3363		-9.3	100.0	L
Diisopropyl ether	0.8583	0.9816			14.4	100.0	A
1,4-Dioxane	0.0029	0.0034			17.3	100.0	A
Ethyl Acetate	0.2184	0.2437			11.6	100.0	A
Ethyl ether	0.1819	0.1420			-21.9	100.0	A
Ethyl Methacrylate	50.0000		46.3377		-7.3	100.0	L
Ethyl tert-butyl ether	0.7740	0.8770			13.3	100.0	A
Ethylbenzene	1.1545	1.1213			-2.9	20.0	A
Freon 113	0.2641	0.2283			-13.6	100.0	A
Heptane	0.1781	0.1957			9.9	100.0	A
Hexachlorobutadiene	0.4231	0.3971			-6.1	100.0	A
Hexachloroethane	0.4856	0.4737			-2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date/Time: 6/25/2015 10:32

Lab File ID: 15062502.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.5247	0.4285			-18.3	100.0	A
2-Hexanone	250		242		-3.3	100.0	L
Iodomethane	50.0000		35.9167		-28.2	100.0	Q
Isobutyl alcohol	500		596		19.1	100.0	Q
Isopropyl Alcohol	0.0159	0.0118			-25.8	100.0	A
Isopropylbenzene	50.0000		43.2807		-13.4	100.0	Q
p-Isopropyltoluene	50.0000		44.4060		-11.2	100.0	L
Methyl acetate	0.0480	0.0384			-20.0	100.0	A
Methyl acrylate	0.2171	0.2437			12.2	100.0	A
Methacrylonitrile	50.0000		51.3212		2.6	100.0	L
Methyl cyclohexane	1.0836	1.0153			-6.3	100.0	A
Methyl methacrylate	50.0000		46.8813		-6.2	100.0	L
Methyl t-Butyl Ether	0.7613	0.7108			-6.6	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		221		-11.5	100.0	Q
Methylene Chloride	50.0000		44.9267		-10.1	100.0	Q
Naphthalene	50.0000		40.4959		-19.0	100.0	L
Nitrobenzene	500		492		-1.7	100.0	Q
2-Nitropropane	250		224		-10.2	100.0	L
Octane	50.0000		55.6635		11.3	100.0	L
Pentachloroethane	0.5874	0.6451			9.8	100.0	A
Pentane	0.2022	0.1684			-16.7	100.0	A
n-Propanol	0.0197	0.0206			4.7	100.0	A
Propionitrile	0.0354	0.0377			6.5	100.0	A
n-Propylbenzene	50.0000		47.7988		-4.4	100.0	L
Styrene	50.0000		55.7152		11.4	100.0	L
1,1,1,2-Tetrachloroethane	0.7162	0.7508			4.8	100.0	A
1,1,2,2-Tetrachloroethane	0.8671	0.8839		0.300	1.9	100.0	A
Tetrachloroethene	0.7367	0.6720			-8.8	100.0	A
Tetrahydrofuran	0.0665	0.0741			11.5	100.0	A
Toluene	50.0000		51.0340		2.1	20.0	L
Total Xylenes	1.3135	1.3778			4.9	100.0	A
1,2,3-Trichlorobenzene	50.0000		37.3642		-25.3	100.0	L
1,2,4-Trichlorobenzene	50.0000		38.5217		-23.0	100.0	L
1,1,1-Trichloroethane	0.4497	0.4897			8.9	100.0	A
1,1,2-Trichloroethane	0.5497	0.5630			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms15.i Calibration Date/Time: 6/25/2015 10:32

Lab File ID: 15062502.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 01:45 03:28

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.3275	0.3443			5.1	100.0	A
Trichlorofluoromethane	0.5315	0.5118			-3.7	100.0	A
1,2,3-Trichloropropane	0.2652	0.2803			5.7	100.0	A
1,2,4-Trimethylbenzene	50.0000		45.1342		-9.7	100.0	Q
1,3,5-Trimethylbenzene	50.0000		44.6380		-10.7	100.0	Q
Vinyl Acetate	50.0000		49.5465		-0.9	100.0	L
Vinyl Chloride	0.3720	0.3747			0.7	20.0	A
o-Xylene	50.0000		46.9290		-6.1	100.0	L
mp-Xylene	1.3581	1.3897			2.3	100.0	A
4-Bromofluorobenzene	0.8865	0.8427			-4.9	100.0	A
Dibromofluoromethane	0.2923	0.2814			-3.7	100.0	A
1,2-Dichloroethane-d4	0.3346	0.3068			-8.3	100.0	A
Toluene-d8	2.4622	2.4653			0.1	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		168		-32.8	100.0	L
Acrolein	0.0247	0.0171			-30.6	100.0	A
Acrylonitrile	0.0565	0.0402			-28.8	100.0	A
Acetonitrile	0.0133	0.0075			-43.5	100.0	A
tert-Amyl Ethylether	0.4410	0.3859			-12.5	100.0	A
tert-Amyl methyl ether	0.5535	0.4735			-14.5	100.0	A
tert-Amyl Alcohol	0.0083	0.0040			-52.3	100.0	A
Benzene	0.8870	0.7714			-13.0	100.0	A
Benzyl Chloride	50.0000		48.9703		-2.1	100.0	Q
Bromobenzene	0.6235	0.6523			4.6	100.0	A
Bromochloromethane	0.1297	0.1184			-8.7	100.0	A
Bromodichloromethane	0.3144	0.2662			-15.3	100.0	A
Bromoform	0.3551	0.3483		0.100	-1.9	100.0	A
Bromomethane	50.0000		48.1477		-3.7	100.0	Q
2-Butanone	0.0197	0.0127			-35.6	100.0	A
tert.- Butyl Alcohol	0.0095	0.0125			31.3	100.0	A
tert-Butylbenzene	0.4274	0.4797			12.2	100.0	A
n-Butylbenzene	50.0000		49.7214		-0.6	100.0	Q
sec-Butylbenzene	2.1145	2.4052			13.8	100.0	A
Carbon Disulfide	0.6398	0.5764			-9.9	100.0	A
Carbon Tetrachloride	0.3237	0.3082			-4.8	100.0	A
Chloroacetonitrile	250		143		-42.7	100.0	L
Chlorobenzene	1.6032	1.5886		0.300	-0.9	100.0	A
1-Chlorobutane	0.1865	0.1597			-14.4	100.0	A
Chlorodibromomethane	0.6081	0.6011			-1.2	100.0	A
Chloroethane	0.1410	0.1282			-9.1	100.0	A
2-Chloroethylvinyl ether	50.0000		35.9373		-28.1	100.0	L
Chloroform	50.0000		43.4226		-13.2	20.0	Q
1-Chlorohexane	0.7478	0.8393			12.2	100.0	A
Chloromethane	0.2166	0.1917		0.100	-11.5	100.0	A
Chloroprene	0.2879	0.2606			-9.5	100.0	A
3-Chloro-1-propene	0.2386	0.1901			-20.3	100.0	A
o-Chlorotoluene	1.5515	1.6332			5.3	100.0	A
p-Chlorotoluene	1.4418	1.5214			5.5	100.0	A
Cyclohexane	0.3183	0.3104			-2.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.0747	0.0561			-24.9	100.0	A
1,2-Dibromoethane	0.4829	0.4520			-6.4	100.0	A
Dibromomethane	0.1395	0.1164			-16.5	100.0	A
trans-1,4-Dichloro-2-butene	0.1020	0.0796			-21.9	100.0	A
1,2-Dichlorobenzene	1.0396	1.0477			0.8	100.0	A
1,3-Dichlorobenzene	1.1322	1.1686			3.2	100.0	A
1,4-Dichlorobenzene	1.1541	1.1664			1.1	100.0	A
Dichlorodifluoromethane	0.2949	0.2845			-3.5	100.0	A
1,1-Dichloroethane	0.3869	0.3287		0.100	-15.1	100.0	A
1,2-Dichloroethene, Total	0.2896	0.2465			-14.9	100.0	A
1,2-Dichloroethane	0.2596	0.2180			-16.0	100.0	A
1,1-Dichloroethene	0.2882	0.2540			-11.9	20.0	A
cis-1,2-Dichloroethene	0.2946	0.2473			-16.0	100.0	A
trans-1,2-Dichloroethene	0.2846	0.2458			-13.6	100.0	A
Dichlorofluoromethane	0.3856	0.3687			-4.4	100.0	A
1,1-Dichloro-2-Propanone	250		141		-43.4	100.0	L
2,2-Dichloropropane	0.3015	0.2842			-5.7	100.0	A
1,3-Dichloropropane	0.7603	0.6964			-8.4	100.0	A
1,2-Dichloropropane	0.2166	0.1837			-15.2	20.0	A
1,1-Dichloropropene	0.3086	0.2801			-9.2	100.0	A
cis-1,3-Dichloropropene	0.8241	0.8127			-1.4	100.0	A
trans-1,3-Dichloropropene	0.7035	0.6802			-3.3	100.0	A
1,3-Dichloropropene, Total	0.7638	0.7465			-2.3	100.0	A
Diisobutylene	50.0000		42.7841		-14.4	100.0	L
Diisopropyl ether	0.5630	0.4757			-15.5	100.0	A
1,4-Dioxane	1250		245		-80.4	100.0	Q
Ethyl Acetate	0.1418	0.0967			-31.8	100.0	A
Ethyl ether	0.1255	0.1053			-16.1	100.0	A
Ethyl Methacrylate	0.5715	0.5159			-9.7	100.0	A
Ethyl tert-butyl ether	0.5710	0.4851			-15.0	100.0	A
Ethylbenzene	0.8136	0.8384			3.0	20.0	A
Freon 113	0.2067	0.2001			-3.2	100.0	A
Heptane	50.0000		44.8541		-10.3	100.0	Q
Hexachlorobutadiene	50.0000		44.6068		-10.8	100.0	L
Hexachloroethane	0.3751	0.3902			4.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3735	0.3390			-9.2	100.0	A
2-Hexanone	0.2172	0.1640			-24.5	100.0	A
Iodomethane	50.0000		46.0850		-7.8	100.0	Q
Isobutyl alcohol	0.0017	0.0007			-58.6	100.0	A
Isopropyl Alcohol	250		82.4922		-67.0	100.0	L
Isopropylbenzene	2.0417	2.2977			12.5	100.0	A
p-Isopropyltoluene	50.0000		47.7215		-4.6	100.0	L
Methyl acetate	0.0292	0.0215			-26.4	100.0	A
Methyl acrylate	0.1483	0.1104			-25.6	100.0	A
Methacrylonitrile	0.0769	0.0577			-25.0	100.0	A
Methyl cyclohexane	0.8757	0.9542			9.0	100.0	A
Methyl methacrylate	0.1297	0.0955			-26.4	100.0	A
Methyl t-Butyl Ether	0.5579	0.4503			-19.3	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.3173	0.2490			-21.5	100.0	A
Methylene Chloride	50.0000		46.3829		-7.2	100.0	Q
Naphthalene	50.0000		38.4865		-23.0	100.0	L
Nitrobenzene	500		300		-40.1	100.0	Q
2-Nitropropane	0.0770	0.0635			-17.6	100.0	A
Octane	50.0000		48.5159		-3.0	100.0	Q
Pentachloroethane	0.3786	0.3878			2.4	100.0	A
Pentane	50.0000		47.6533		-4.7	100.0	L
n-Propanol	0.0099	0.0079			-19.6	100.0	A
Propionitrile	0.0194	0.0126			-35.1	100.0	A
n-Propylbenzene	0.6068	0.6794			12.0	100.0	A
Styrene	1.3234	1.4442			9.1	100.0	A
1,1,1,2-Tetrachloroethane	0.5803	0.5857			0.9	100.0	A
1,1,2,2-Tetrachloroethane	0.4625	0.3975		0.300	-14.1	100.0	A
Tetrachloroethene	0.6192	0.6387			3.1	100.0	A
Tetrahydrofuran	0.0400	0.0255			-36.4	100.0	A
Toluene	1.3298	1.3458			1.2	20.0	A
Total Xylenes	0.9738	1.0136			4.1	100.0	A
1,2,3-Trichlorobenzene	0.5866	0.5263			-10.3	100.0	A
1,2,4-Trichlorobenzene	0.6833	0.6665			-2.5	100.0	A
1,1,1-Trichloroethane	0.3446	0.3106			-9.8	100.0	A
1,1,2-Trichloroethane	0.3905	0.3542			-9.3	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-046

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2477	0.2210			-10.8	100.0	A
Trichlorofluoromethane	0.4024	0.3855			-4.2	100.0	A
1,2,3-Trichloropropane	0.1418	0.1261			-11.0	100.0	A
1,2,4-Trimethylbenzene	1.6811	1.8606			10.7	100.0	A
1,3,5-Trimethylbenzene	1.6801	1.8442			9.8	100.0	A
Vinyl Acetate	50.0000		37.5234		-25.0	100.0	L
Vinyl Chloride	0.2185	0.2266			3.7	20.0	A
o-Xylene	0.9600	0.9997			4.1	100.0	A
mp-Xylene	0.9808	1.0205			4.1	100.0	A
4-Bromofluorobenzene	0.6372	0.6759			6.1	100.0	A
Dibromofluoromethane	0.2340	0.2036			-13.0	100.0	A
1,2-Dichloroethane-d4	0.2201	0.1814			-17.6	100.0	A
Toluene-d8	1.9750	1.9642			-0.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Lab File ID: 15061707.D Date Analyzed: 6/17/2015

Instrument ID: ms15.i Time Analyzed: 02:54

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	862124	5.913	797335	7.686	2070111	3.910
UPPER LIMIT	1724248	6.413	1594670	8.186	4140222	4.410
LOWER LIMIT	431062	5.413	398668	7.186	1035056	3.410
SAMPLE NO.						
2192681(LCS)	839992	5.912	778199	7.686	2016972	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Lab File ID: 515061708.D Date Analyzed: 6/17/2015

Instrument ID: ms05.i Time Analyzed: 13:44

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	864583	6.033	998381	7.806	2042815	4.041
UPPER LIMIT	1729166	6.533	1996762	8.306	4085630	4.541
LOWER LIMIT	432292	5.533	499191	7.306	1021408	3.541
SAMPLE NO.						
2193058(LCS)	888170	6.032	1053562	7.806	2124851	4.041

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Lab File ID: 15062502.D Date Analyzed: 6/25/2015

Instrument ID: ms15.i Time Analyzed: 10:32

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	797574	5.912	706872	7.686	1884809	3.910
UPPER LIMIT	1595148	6.412	1413744	8.186	3769618	4.410
LOWER LIMIT	398787	5.412	353436	7.186	942405	3.410
SAMPLE NO.						
1800	797574	5.912	706872	7.686	1884809	3.910
2196949(MB)	692310	5.913	571026	7.686	1715843	3.910
2196950(LCS)	763607	5.913	695900	7.686	1786010	3.910
TB-062415	665621	5.912	524652	7.686	1711682	3.910
MRC-MW14B-062415	707312	5.913	611869	7.686	1798569	3.910
MRC-MW12A-062415	669991	5.913	546500	7.686	1631296	3.910
MRC-MW12B-062415	667751	5.912	548920	7.686	1644337	3.910
MRC-MW14A-062415	675321	5.912	569929	7.686	1637451	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-046

Lab File ID: 515062701.D Date Analyzed: 6/27/2015

Instrument ID: ms05.i Time Analyzed: 10:28

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	766044	6.038	864040	7.806	2001113	4.041
UPPER LIMIT	1532088	6.538	1728080	8.306	4002226	4.541
LOWER LIMIT	383022	5.538	432020	7.306	1000557	3.541
SAMPLE NO.						
1800	766044	6.038	864040	7.806	2001113	4.041
2197921(MB)	769518	6.038	864083	7.806	1994355	4.041
2197922(LCS)	734626	6.038	850590	7.806	1931271	4.041
MRC-MW14B-062415	741913	6.038	840447	7.806	1951441	4.041
MRC-MW12A-062415	721714	6.038	808546	7.806	1861996	4.041
MRC-MW12B-062415	732482	6.038	824713	7.806	1906756	4.041

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2197632	84								0
02	2197633LCSMI	82								0
03	MRC-MW12A-06	85								0
04	MRC-MW12B-06	90								0
05	MRC-MW14A-06	87								0
06	MRC-MW12A-06	92								0
07	MRC-MW12B-06	97								0
08	MRC-MW14B-06	49*								1
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Matrix Spike - Sample No.: INITIAL CALIBRATION VERIFICATION

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Matrix Spike - Sample No.: 2197633LCSMID

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	#	QC. LIMITS REC.
1,4-Dioxane	1.00000	0.00	0.800591	80		70-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2197632

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Lab File ID: 12062628 Lab Sample ID: 2197632

Instrument ID: MS12 Date Extracted: 06/26/15

Matrix: (soil/water) WATER Date Analyzed: 06/27/15

Level:(low/med) LOW Time Analyzed: 1038

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2197633LCSMI	2197633	12062629	06/27/15
02	MRC-MW12A-06	2078952003	12062809	06/28/15
03	MRC-MW12B-06	2078952004	12062810	06/28/15
04	MRC-MW14A-06	2078952005	12062811	06/28/15
05	MRC-MW12A-06	2078952003	12062908	06/29/15
06	MRC-MW12B-06	2078952004	12062909	06/29/15
07	MRC-MW14B-06	2078952002	12070240	07/03/15
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM IV SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	ICV	ICV	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date: 06/27/15 Time: 1013

Lab File ID: 12062627 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF2.0000 or AMOUNT	CCAL RRF2.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	0.4498490	0.5000000	1.4181865	0.00001	-10.03	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6592922	0.6592922	0.00001	-7.40	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date: 06/28/15 Time: 0944

Lab File ID: 12062801 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.38e-003	3.5e-003	1.3203630	0.00001	-3.43	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6651476	0.6651476	0.00001	-6.58	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date: 06/29/15 Time: 0855

Lab File ID: 12062906 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.52e-002	5.e-002	1.4128718	0.00001	-9.60	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6779108	0.6779108	0.00001	-4.79	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: MS12 Calibration Date: 07/03/15 Time: 0256

Lab File ID: 12070239 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF2.0000 or AMOUNT	CCAL RRF2.0000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	0.4717509	0.5000000	1.3523446	0.00001	-5.65	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6772632	0.6772632	0.00001	-4.88	30.00	AVRG

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

EPA Sample No. (SSTD050##): HICHECK-8 Date Analyzed: 06/27/15

Lab File ID (Standard): 12062627 Time Analyzed: 1013

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	66174	6.35				
	UPPER LIMIT	86026	6.85				
	LOWER LIMIT	46322	5.85				
	SAMPLE NO.						
01	2197632	69325	6.35				
02	2197633LCSMI	68053	6.35				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 06/28/15

Lab File ID (Standard): 12062801 Time Analyzed: 0944

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	55078	6.35				
	UPPER LIMIT	71601	6.85				
	LOWER LIMIT	38555	5.85				
	SAMPLE NO.						
01	MRC-MW12A-06	67334	6.35				
02	MRC-MW12B-06	63290	6.35				
03	MRC-MW14A-06	63157	6.35				
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 06/29/15

Lab File ID (Standard): 12062906 Time Analyzed: 0855

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	57956	6.35				
	UPPER LIMIT	75343	6.85				
	LOWER LIMIT	40569	5.85				
	SAMPLE NO.						
01	MRC-MW12A-06	58163	6.35				
02	MRC-MW12B-06	57717	6.35				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

EPA Sample No. (SSTD050##): HICHECK-8 Date Analyzed: 07/03/15

Lab File ID (Standard): 12070239 Time Analyzed: 0256

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	61341	6.35				
	UPPER LIMIT	79743	6.85				
	LOWER LIMIT	42939	5.85				
	SAMPLE NO.						
01	MRC-MW14B-06	61613	6.35				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	ICV	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	HICHECK-8	HICHECK-8	06/27/15	1013	8.36			
02	2197632	2197632	06/27/15	1038	8.36			
03	2197633LCSMI	2197633	06/27/15	1104	8.36			
04	1800	1800	06/28/15	0944	8.36			
05	MRC-MW12A-06	2078952003	06/28/15	1342	8.36			
06	MRC-MW12B-06	2078952004	06/28/15	1407	8.36			
07	MRC-MW14A-06	2078952005	06/28/15	1433	8.36			
08	MIDCHECK-5	MIDCHECK-5	06/29/15	0855	8.36			
09	MRC-MW12A-06	2078952003	06/29/15	1621	8.36			
10	MRC-MW12B-06	2078952004	06/29/15	1647	8.36			
11	HICHECK-8	HICHECK-8	07/03/15	0256	8.36			
12	MRC-MW14B-06	2078952002	07/03/15	0321	8.38			
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	ICV	ICV	08/13/14	2119	8.38			
12								
13								
14								
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32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 4
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2197468

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Lab File ID: MFQA003 Lab Sample ID: 2197468

Date Analyzed: 06/26/15 Time Analyzed: 0721

GC Column: PORAPAK Q ID: 2 (mm) Heated Purge: (Y/N) N

Instrument ID: GC03

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRC-MW14B-06	2078952002	MFQA004	0743
02	MRC-MW14B-06	2197469	MFQA005	0759
03	MRC-MW12A-06	2078952003	MFQA006	0814
04	MRC-MW12B-06	2078952004	MFQA007	0834
05				
06				
07				
08				
09				
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COMMENTS:

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RF10: MD2A009 RF50: MD2A002 RF100: MD2A003
RF500: MD2A004 RF1000: MD2A005 RF10000: MD2A006

COMPOUND	RF10	RF50	RF100	RF500	RF1000	RF10000
METHANE	32.711	28.296	25.507	24.980	23.513	23.330
ETHENE	50.865	48.801	48.238	46.332	43.516	
ETHANE	52.610	49.609	48.713	46.893	44.002	
PROPANE	74.249	71.266	71.078	69.260	65.151	65.296
N-BUTANE	100.200	92.620	91.190	91.852	86.759	82.379
ISO-BUTANE	90.200	89.460	88.960	90.476	85.102	82.421

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RF100000: MD2A007

COMPOUND	RF100000	CURVE	COEFFICENT A1	%RSD OR R^2	MAX %RSD OR R^2
METHANE	19.426	AVRG	25.3948127	16.517	20.000
ETHENE		AVRG	47.5505194	5.835	20.000
ETHANE		AVRG	48.3654877	6.610	20.000
PROPANE	57.178	AVRG	67.6397620	8.372	20.000
N-BUTANE	75.636	AVRG	88.6622771	8.954	20.000
ISO-BUTANE	74.894	AVRG	85.9303300	6.640	20.000

Average %RSD test result.

Calculate Average %RSD: 8.821423531
Maximum Average %RSD: 15.00000000

Note: Passes Average %RSD Test.

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

LAB FILE ID: RT1: MD2A009 RT2: MD2A002 RT3: MD2A003
RT4: MD2A004 RT5: MD2A005 RT6: MD2A006

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
METHANE	0.500	0.480	0.490	0.490	0.490	0.490
ETHENE	1.900	1.890	1.890	1.890	1.890	
ETHANE	2.370	2.360	2.360	2.360	2.360	
PROPANE	4.480	4.470	4.470	4.470	4.470	4.460
N-BUTANE	6.700	6.700	6.700	6.690	6.690	6.680
ISO-BUTANE	6.190	6.170	6.170	6.170	6.160	6.160

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date(s): 04/02/15 04/02/15

Column: PORAPAK Q ID: 2.00 (mm) Calibration Time(s): 1502 2030

RT7: MD2A007

COMPOUND	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
METHANE	0.490	0.490	0.457	0.536
ETHENE		1.892	1.751	2.056
ETHANE		2.362	2.180	2.560
PROPANE	4.430	4.464	4.119	4.835
N-BUTANE	6.610	6.681	6.164	7.236
ISO-BUTANE	6.080	6.157	5.692	6.682

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date: 04/03/15 Time: 1008

Lab File ID: MD2A010 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF500.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
METHANE	25.395000	23.842132	0.01	-6.11	15.00	AVRG
ETHENE	47.550000	44.347656	0.01	-6.73	15.00	AVRG
ETHANE	48.365000	44.289109	0.01	-8.43	15.00	AVRG
PROPANE	67.640000	65.492596	0.01	-3.17	15.00	AVRG
N-BUTANE	88.662000	89.376000	0.01	0.80	15.00	AVRG
ISO-BUTANE	85.930000	89.948000	0.01	4.68	15.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date: 06/26/15 Time: 0645

Lab File ID: MFQA001 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF100.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	23.640377	0.01	-6.91	15.00	AVRG	
ETHENE	47.550000	48.884720	0.01	2.81	15.00	AVRG	
ETHANE	48.365000	49.494739	0.01	2.34	15.00	AVRG	
PROPANE	67.640000	73.156900	0.01	8.16	15.00	AVRG	
N-BUTANE	88.662000		0.01	-100.00	15.00	AVRG	<-
ISO-BUTANE	85.930000		0.01	-100.00	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date: 06/26/15 Time: 0701

Lab File ID: MFQA002 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	24.941056	0.01	-1.79	15.00	AVRG	
ETHENE	47.550000	47.678711	0.01	0.27	15.00	AVRG	
ETHANE	48.365000	49.895050	0.01	3.16	15.00	AVRG	
PROPANE	67.640000	76.430405	0.01	13.00	15.00	AVRG	
N-BUTANE	88.662000	109.86700	0.01	23.92	15.00	AVRG	<-
ISO-BUTANE	85.930000	104.23900	0.01	21.31	15.00	AVRG	<-

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

Instrument ID: GC03 Calibration Date: 06/26/15 Time: 1133

Lab File ID: MFQA017 Init. Calib. Date(s): 04/02/15 04/02/15

Init. Calib. Times: 1502 2030

GC Column: PORAPAK Q ID: 2.00 (mm)

COMPOUND	RRF OR AMOUNT	RRF1000.0 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
METHANE	25.395000	24.473603	0.01	-3.63	15.00	AVRG	
ETHENE	47.550000	46.455078	0.01	-2.30	15.00	AVRG	
ETHANE	48.365000	48.468317	0.01	0.21	15.00	AVRG	
PROPANE	67.640000	73.153998	0.01	8.15	15.00	AVRG	
N-BUTANE	88.662000	103.06000	0.01	16.24	15.00	AVRG	<-
ISO-BUTANE	85.930000	98.689000	0.01	14.85	15.00	AVRG	

FORM VII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	ICAL2	ICAL2	04/02/15	1502		
02	ICAL3	ICAL3	04/02/15	1531		
03	ICAL4	ICAL4	04/02/15	1550		
04	ICAL5	ICAL5	04/02/15	1607		
05	ICAL6	ICAL6	04/02/15	1629		
06	ICAL7	ICAL7	04/02/15	1649		
07	ICAL1	ICAL1	04/02/15	2030		
08	ICV	ICV	04/03/15	1008		
09						
10						
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QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM046

GC Column: PORAPAK Q ID: 2.00(mm) Init. Calib. Date(s): 04/02/15 04/02/15

Instrument ID: GC03

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION					
	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	RT #	RT #
01	LEVEL3	LEVEL3	06/26/15	0645		
02	LEVEL5	LEVEL5	06/26/15	0701		
03	2197468	2197468	06/26/15	0721		
04	MRC-MW14B-06	2078952002	06/26/15	0743		
05	MRC-MW14B-06	2197469	06/26/15	0759		
06	MRC-MW12A-06	2078952003	06/26/15	0814		
07	MRC-MW12B-06	2078952004	06/26/15	0834		
08	LEVEL5	LEVEL5	06/26/15	1133		
09						
10						
11						
12						
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15						
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17						
18						
19						
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32						

QC LIMITS

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.0979	0.1000	98		90 - 110	M	6/25/2015	11:13	A062515B 1
	Arsenic	0.1015	0.1000	102		90 - 110	M	6/25/2015	11:13	A062515B 1
	Barium	0.1010	0.1000	101		90 - 110	M	6/25/2015	11:13	A062515B 1
	Beryllium	0.0999	0.1000	100		90 - 110	M	6/25/2015	11:13	A062515B 1
	Cadmium	0.0998	0.1000	100		90 - 110	M	6/25/2015	11:13	A062515B 1
	Chromium	0.1020	0.1000	102		90 - 110	M	6/25/2015	11:13	A062515B 1
	Cobalt	0.1001	0.1000	100		90 - 110	M	6/25/2015	11:13	A062515B 1
	Copper	0.0989	0.1000	99		90 - 110	M	6/25/2015	11:13	A062515B 1
	Lead	0.0983	0.1000	98		90 - 110	M	6/25/2015	11:13	A062515B 1
	Manganese	0.0999	0.1000	100		90 - 110	M	6/25/2015	11:13	A062515B 1
	Mercury	0.0020	0.0020	100		90 - 110	M	6/25/2015	11:13	A062515B 1
	Molybdenum	0.0991	0.1000	99		90 - 110	M	6/25/2015	11:13	A062515B 1
	Nickel	0.0984	0.1000	98		90 - 110	M	6/25/2015	11:13	A062515B 1
	Selenium	0.1041	0.1000	104		90 - 110	M	6/25/2015	11:13	A062515B 1
	Silver	0.0941	0.1000	94		90 - 110	M	6/25/2015	11:13	A062515B 1
	Thallium	0.0980	0.1000	98		90 - 110	M	6/25/2015	11:13	A062515B 1
	Vanadium	0.1020	0.1000	102		90 - 110	M	6/25/2015	11:13	A062515B 1
LLICV										
	Antimony	0.0020	0.0020	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Arsenic	0.0029	0.0030	97		70 - 130	M	6/25/2015	11:39	A062515B 1
	Barium	0.0051	0.0050	102		70 - 130	M	6/25/2015	11:39	A062515B 1
	Beryllium	0.0010	0.0010	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Cadmium	0.0010	0.0010	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Chromium	0.0020	0.0020	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Cobalt	0.0050	0.0050	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Copper	0.0050	0.0050	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Lead	0.0019	0.0020	95		70 - 130	M	6/25/2015	11:39	A062515B 1
	Manganese	0.0050	0.0050	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Mercury	0.0002	0.0002	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Molybdenum	0.0025	0.0020	125		70 - 130	M	6/25/2015	11:39	A062515B 1
	Nickel	0.0048	0.0050	96		70 - 130	M	6/25/2015	11:39	A062515B 1
	Selenium	0.0054	0.0050	108		70 - 130	M	6/25/2015	11:39	A062515B 1
	Silver	0.0020	0.0020	100		70 - 130	M	6/25/2015	11:39	A062515B 1
	Thallium	0.0009	0.0010	90		70 - 130	M	6/25/2015	11:39	A062515B 1
	Vanadium	0.0019	0.0020	95		70 - 130	M	6/25/2015	11:39	A062515B 1

6020 3015

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0969	0.1000	97		90 - 110	M	6/25/2015	13:48	A062515B 1
	Arsenic	0.1014	0.1000	101		90 - 110	M	6/25/2015	13:48	A062515B 1
	Barium	0.1015	0.1000	102		90 - 110	M	6/25/2015	13:48	A062515B 1
	Beryllium	0.0928	0.1000	93		90 - 110	M	6/25/2015	13:48	A062515B 1
	Cadmium	0.0989	0.1000	99		90 - 110	M	6/25/2015	13:48	A062515B 1
	Chromium	0.1032	0.1000	103		90 - 110	M	6/25/2015	13:48	A062515B 1
	Cobalt	0.1034	0.1000	103		90 - 110	M	6/25/2015	13:48	A062515B 1
	Copper	0.1008	0.1000	101		90 - 110	M	6/25/2015	13:48	A062515B 1
	Lead	0.0986	0.1000	99		90 - 110	M	6/25/2015	13:48	A062515B 1
	Manganese	0.1027	0.1000	103		90 - 110	M	6/25/2015	13:48	A062515B 1
	Mercury	0.0019	0.0020	95		90 - 110	M	6/25/2015	13:48	A062515B 1
	Molybdenum	0.0963	0.1000	96		90 - 110	M	6/25/2015	13:48	A062515B 1
	Nickel	0.0994	0.1000	99		90 - 110	M	6/25/2015	13:48	A062515B 1
	Selenium	0.1063	0.1000	106		90 - 110	M	6/25/2015	13:48	A062515B 1
	Silver	0.0930	0.1000	93		90 - 110	M	6/25/2015	13:48	A062515B 1
	Thallium	0.0988	0.1000	99		90 - 110	M	6/25/2015	13:48	A062515B 1
	Vanadium	0.1035	0.1000	104		90 - 110	M	6/25/2015	13:48	A062515B 1

6020 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0021	0.0020	105		70 - 130	M	6/25/2015	13:56	A062515B 1
	Arsenic	0.0031	0.0030	103		70 - 130	M	6/25/2015	13:56	A062515B 1
	Barium	0.0051	0.0050	102		70 - 130	M	6/25/2015	13:56	A062515B 1
	Beryllium	0.0010	0.0010	100		70 - 130	M	6/25/2015	13:56	A062515B 1
	Cadmium	0.0011	0.0010	110		70 - 130	M	6/25/2015	13:56	A062515B 1
	Chromium	0.0019	0.0020	95		70 - 130	M	6/25/2015	13:56	A062515B 1
	Cobalt	0.0049	0.0050	98		70 - 130	M	6/25/2015	13:56	A062515B 1
	Copper	0.0051	0.0050	102		70 - 130	M	6/25/2015	13:56	A062515B 1
	Lead	0.0020	0.0020	100		70 - 130	M	6/25/2015	13:56	A062515B 1
	Manganese	0.0051	0.0050	102		70 - 130	M	6/25/2015	13:56	A062515B 1
	Mercury	0.0002	0.0002	100		70 - 130	M	6/25/2015	13:56	A062515B 1
	Molybdenum	0.0019	0.0020	95		70 - 130	M	6/25/2015	13:56	A062515B 1
	Nickel	0.0050	0.0050	100		70 - 130	M	6/25/2015	13:56	A062515B 1
	Selenium	0.0054	0.0050	108		70 - 130	M	6/25/2015	13:56	A062515B 1
	Silver	0.0020	0.0020	100		70 - 130	M	6/25/2015	13:56	A062515B 1
	Thallium	0.0009	0.0010	90		70 - 130	M	6/25/2015	13:56	A062515B 1
	Vanadium	0.0020	0.0020	100		70 - 130	M	6/25/2015	13:56	A062515B 1
CCV										
	Antimony	0.0969	0.1000	97		90 - 110	M	6/25/2015	15:00	A062515B 1
	Arsenic	0.1028	0.1000	103		90 - 110	M	6/25/2015	15:00	A062515B 1
	Barium	0.1020	0.1000	102		90 - 110	M	6/25/2015	15:00	A062515B 1
	Beryllium	0.0928	0.1000	93		90 - 110	M	6/25/2015	15:00	A062515B 1
	Cadmium	0.0999	0.1000	100		90 - 110	M	6/25/2015	15:00	A062515B 1
	Chromium	0.1034	0.1000	103		90 - 110	M	6/25/2015	15:00	A062515B 1
	Cobalt	0.1035	0.1000	104		90 - 110	M	6/25/2015	15:00	A062515B 1
	Copper	0.1013	0.1000	101		90 - 110	M	6/25/2015	15:00	A062515B 1
	Lead	0.0991	0.1000	99		90 - 110	M	6/25/2015	15:00	A062515B 1
	Manganese	0.1034	0.1000	103		90 - 110	M	6/25/2015	15:00	A062515B 1
	Mercury	0.0019	0.0020	95		90 - 110	M	6/25/2015	15:00	A062515B 1
	Molybdenum	0.0960	0.1000	96		90 - 110	M	6/25/2015	15:00	A062515B 1
	Nickel	0.1006	0.1000	101		90 - 110	M	6/25/2015	15:00	A062515B 1
	Selenium	0.1047	0.1000	105		90 - 110	M	6/25/2015	15:00	A062515B 1
	Silver	0.0934	0.1000	93		90 - 110	M	6/25/2015	15:00	A062515B 1
	Thallium	0.0992	0.1000	99		90 - 110	M	6/25/2015	15:00	A062515B 1
	Vanadium	0.1036	0.1000	104		90 - 110	M	6/25/2015	15:00	A062515B 1

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0020	0.0020	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Arsenic	0.0031	0.0030	103		70 - 130	M	6/25/2015	15:07	A062515B 1
	Barium	0.0050	0.0050	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Beryllium	0.0009	0.0010	90		70 - 130	M	6/25/2015	15:07	A062515B 1
	Cadmium	0.0010	0.0010	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Chromium	0.0020	0.0020	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Cobalt	0.0049	0.0050	98		70 - 130	M	6/25/2015	15:07	A062515B 1
	Copper	0.0051	0.0050	102		70 - 130	M	6/25/2015	15:07	A062515B 1
	Lead	0.0020	0.0020	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Manganese	0.0050	0.0050	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Mercury	0.0002	0.0002	100		70 - 130	M	6/25/2015	15:07	A062515B 1
	Molybdenum	0.0019	0.0020	95		70 - 130	M	6/25/2015	15:07	A062515B 1
	Nickel	0.0048	0.0050	96		70 - 130	M	6/25/2015	15:07	A062515B 1
	Selenium	0.0054	0.0050	108		70 - 130	M	6/25/2015	15:07	A062515B 1
	Silver	0.0019	0.0020	95		70 - 130	M	6/25/2015	15:07	A062515B 1
	Thallium	0.0009	0.0010	90		70 - 130	M	6/25/2015	15:07	A062515B 1
	Vanadium	0.0020	0.0020	100		70 - 130	M	6/25/2015	15:07	A062515B 1

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/25/2015	11:17	A062515B 104
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/25/2015	11:17	A062515B 104
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/25/2015	11:17	A062515B 104
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Mercury	0.000107	J	0.000074	0.000074	0.000200	M	6/25/2015	11:17	A062515B 104
	Molybdenum	0.0007	J	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	11:17	A062515B 104
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/25/2015	11:17	A062515B 104
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	11:17	A062515B 104

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/25/2015	13:52	A062515B 104
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/25/2015	13:52	A062515B 104
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/25/2015	13:52	A062515B 104
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Mercury	0.000200	U	0.000074	0.000074	0.000200	M	6/25/2015	13:52	A062515B 104
	Molybdenum	0.0008	J	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	13:52	A062515B 104
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/25/2015	13:52	A062515B 104
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	13:52	A062515B 104

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/25/2015	15:03	A062515B 104
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/25/2015	15:03	A062515B 104
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/25/2015	15:03	A062515B 104
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Mercury	0.000200	U	0.000074	0.000074	0.000200	M	6/25/2015	15:03	A062515B 104
	Molybdenum	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/25/2015	15:03	A062515B 104
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/25/2015	15:03	A062515B 104
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/25/2015	15:03	A062515B 104

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2196786			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	6/25/2015	14:18	A062515B 1047
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	6/25/2015	14:18	A062515B 1047
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	6/25/2015	14:18	A062515B 1047
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	6/25/2015	14:18	A062515B 1047
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	6/25/2015	14:18	A062515B 1047
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	6/25/2015	14:18	A062515B 1047
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	6/25/2015	14:18	A062515B 1047
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	6/25/2015	14:18	A062515B 1047
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	6/25/2015	14:18	A062515B 1047
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	6/25/2015	14:18	A062515B 1047
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	6/25/2015	14:18	A062515B 1047

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	6/25/2015	11:24	A062515B 10
	Arsenic	0.0002				-0.00300 - -0.00300	6/25/2015	11:24	A062515B 10
	Barium	0.0004				-0.01000 - -0.01000	6/25/2015	11:24	A062515B 10
	Beryllium	0.00004				-0.001000 - -0.001000	6/25/2015	11:24	A062515B 10
	Cadmium	0.0008				-0.00100 - -0.00100	6/25/2015	11:24	A062515B 10
	Chromium	0.0006				-0.00400 - -0.00400	6/25/2015	11:24	A062515B 10
	Cobalt	0.0006				-0.00600 - -0.00600	6/25/2015	11:24	A062515B 10
	Copper	0.0013				-0.00500 - -0.00500	6/25/2015	11:24	A062515B 10
	Lead	0.0002				-0.00200 - -0.00200	6/25/2015	11:24	A062515B 10
	Manganese	0.0013				-0.01000 - -0.01000	6/25/2015	11:24	A062515B 10
	Mercury	0.00008				-0.000200 - -0.000200	6/25/2015	11:24	A062515B 10
	Molybdenum	2.0998	2.00000	105		80 - 120%	6/25/2015	11:24	A062515B 10
	Nickel	0.0011				-0.00500 - -0.00500	6/25/2015	11:24	A062515B 10
	Selenium	0.0001				-0.00500 - -0.00500	6/25/2015	11:24	A062515B 10
	Silver	0.0005				-0.00200 - -0.00200	6/25/2015	11:24	A062515B 10
	Thallium	0.00003				-0.001000 - -0.001000	6/25/2015	11:24	A062515B 10
	Vanadium	0.0002				-0.00200 - -0.00200	6/25/2015	11:24	A062515B 10

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	6/25/2015	11:28	A062515B 10
	Arsenic	0.0192	0.02000	96		80 - 120%	6/25/2015	11:28	A062515B 10
	Barium	0.0004				-0.00500 - -0.00500	6/25/2015	11:28	A062515B 10
	Beryllium	0.00003				-0.001000 - -0.001000	6/25/2015	11:28	A062515B 10
	Cadmium	0.0099	0.01000	99		80 - 120%	6/25/2015	11:28	A062515B 10
	Chromium	0.0196	0.02000	98		80 - 120%	6/25/2015	11:28	A062515B 10
	Cobalt	0.0366	0.04000	92		80 - 120%	6/25/2015	11:28	A062515B 10
	Copper	0.0193	0.02000	96		80 - 120%	6/25/2015	11:28	A062515B 10
	Lead	0.0002				-0.00200 - -0.00200	6/25/2015	11:28	A062515B 10
	Manganese	0.0203	0.02000	102		80 - 120%	6/25/2015	11:28	A062515B 10
	Mercury	0.00010				-0.000200 - -0.000200	6/25/2015	11:28	A062515B 10
	Molybdenum	2.0923	2.00000	105		80 - 120%	6/25/2015	11:28	A062515B 10
	Nickel	0.0358	0.04000	90		80 - 120%	6/25/2015	11:28	A062515B 10
	Selenium	0.0186	0.02000	93		80 - 120%	6/25/2015	11:28	A062515B 10
	Silver	0.0187	0.02000	94		80 - 120%	6/25/2015	11:28	A062515B 10
	Thallium	0.00003				-0.001000 - -0.001000	6/25/2015	11:28	A062515B 10
	Vanadium	0.0397	0.04000	99		80 - 120%	6/25/2015	11:28	A062515B 10

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2196787									
	Antimony	mg/L	0.2220	0.2219		100		80 - 120	M
	Arsenic	mg/L	0.2220	0.2109		95		80 - 120	M
	Barium	mg/L	2.2220	2.3601		106		80 - 120	M
	Beryllium	mg/L	0.2220	0.2012		91		80 - 120	M
	Cadmium	mg/L	0.2220	0.2122		96		80 - 120	M
	Chromium	mg/L	0.2220	0.2292		103		80 - 120	M
	Cobalt	mg/L	0.2220	0.2279		103		80 - 120	M
	Copper	mg/L	0.2220	0.2247		101		80 - 120	M
	Lead	mg/L	0.2220	0.2275		102		80 - 120	M
	Manganese	mg/L	0.2220	0.2305		104		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2273		102		80 - 120	M
	Nickel	mg/L	0.2220	0.2218		100		80 - 120	M
	Selenium	mg/L	0.2220	0.2015		91		80 - 120	M
	Silver	mg/L	0.1110	0.1110		100		80 - 120	M
	Thallium	mg/L	0.2220	0.2226		100		80 - 120	M
	Vanadium	mg/L	0.2220	0.2290		103		80 - 120	M

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SERIAL DILUTION SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Level:** LOW **Client ID:** MRC-MW14A-062415L

Sample ID: **2078952005** **Serial Dilution ID:** **2078952005L**

Analyte	Initial Result mg/L	C	Serial Result mg/L	C	% Difference	Qual	Acceptance Limits	M
Mercury	0.000074	U	0.000074	U			10.00 %	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:**

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Mercury	1.00	0
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	81077						
2196786	MB for HBN 81077 [MDIG/51483	MB	QC-WAT	6/25/15	45.0	50.0	
2196787	LCS for HBN 81077 [MDIG/51483	LCS	QC-WAT	6/25/15	45.0	50.0	
2078952002	MRC-MW14B-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952003	MRC-MW12A-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952004	MRC-MW12B-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952005	MRC-MW14A-062415	SAM	WATER	6/25/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062515B 104

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1047																									
BLK	1.00	1051			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
STANDARD 1	1.00	1054			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
STANDARD 2	1.00	1058			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
STANDARD 3	1.00	1102			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
STANDARD 4	1.00	1106			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
STANDARD 5	1.00	1109			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ICV	1.00	1113			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ICB1	1.00	1117			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ZZZZZZ	1.00	1120																										
ICS-A1	1.00	1124			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ICS-AB1	1.00	1128			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ZZZZZZ	1.00	1132																										
ZZZZZZ	1.00	1135																										
LLICV	1.00	1139			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ZZZZZZ	1.00	1143																										
ZZZZZZ	1.00	1147																										
ZZZZZZ	1.00	1150																										
ZZZZZZ	10.00	1154																										
ZZZZZZ	10.00	1158																										
ZZZZZZ	1.00	1205																										
ZZZZZZ	1.00	1209																										
ZZZZZZ	1.00	1213																										
ZZZZZZ	1.00	1216																										
ZZZZZZ	1.00	1220																										
ZZZZZZ	1.00	1224																										
ZZZZZZ	1.00	1228																										
ZZZZZZ	1.00	1235																										
ZZZZZZ	1.00	1248																										
ZZZZZZ	1.00	1252																										
ZZZZZZ	5.00	1255																										
ZZZZZZ	5.00	1259																										
ZZZZZZ	5.00	1303																										
ZZZZZZ	1.00	1306																										
ZZZZZZ	1.00	1310																										
ZZZZZZ	1.00	1314																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062515B 104

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	1318																										
ZZZZZZ	5.00	1321																										
ZZZZZZ	5.00	1325																										
ZZZZZZ	5.00	1329																										
ZZZZZZ	5.00	1333																										
ZZZZZZ	5.00	1337																										
ZZZZZZ	5.00	1341																										
ZZZZZZ	5.00	1344																										
CCV4	1.00	1348			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
CCB4	1.00	1352			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
LLCCV	1.00	1356			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
2196786	1.00	1418			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2196787	1.00	1422			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	20.00	1426																										
2078952002	1.00	1434			X	X	X	X	X		X	X	X		X			X	X		X	X		X	X			*
2078952003	1.00	1437			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
2078952004	1.00	1441			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
2078952005	1.00	1445			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
2078952005L	5.00	1449																X										
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1456																										
CCV5	1.00	1500			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
CCB5	1.00	1503			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
LLCCV	1.00	1507			X	X	X	X	X		X	X	X		X		X	X	X		X	X		X	X			*
ZZZZZZ	1.00	1511																										
ZZZZZZ	1.00	1515																										
ZZZZZZ	1.00	1518																										
ZZZZZZ	1.00	1522																										
ZZZZZZ	1.00	1530																										
ZZZZZZ	1.00	1533																										
ZZZZZZ	1.00	1537																										
ZZZZZZ	1.00	1541																										
ZZZZZZ	1.00	1544																										
ZZZZZZ	1.00	1548																										
ZZZZZZ	1.00	1552																										
ZZZZZZ	5.00	1556																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062515B 104

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1559																								
ZZZZZZ	5.00	1603																								
ZZZZZZ	1.00	1607																								
ZZZZZZ	1.00	1611																								
ZZZZZZ	1.00	1614																								
ZZZZZZ	1.00	1618																								
ZZZZZZ	1.00	1622																								
ZZZZZZ	1.00	1625																								
ZZZZZZ	1.00	1629																								
ZZZZZZ	1.00	1633																								
ZZZZZZ	1.00	1637																								
ZZZZZZ	5.00	1647																								
ZZZZZZ	5.00	1651																								
ZZZZZZ	5.00	1654																								
ZZZZZZ	5.00	1658																								
ZZZZZZ	5.00	1702																								
ZZZZZZ	5.00	1706																								
ZZZZZZ	5.00	1709																								
ZZZZZZ	5.00	1713																								
ZZZZZZ	5.00	1717																								
ZZZZZZ	5.00	1721																								
ZZZZZZ	1.00	1724																								
ZZZZZZ	1.00	1728																								
ZZZZZZ	1.00	1732																								
ZZZZZZ	5.00	1736																								
ZZZZZZ	5.00	1739																								
ZZZZZZ	5.00	1743																								
ZZZZZZ	5.00	1747																								
ZZZZZZ	5.00	1751																								
ZZZZZZ	5.00	1754																								
ZZZZZZ	5.00	1758																								
ZZZZZZ	5.00	1802																								
ZZZZZZ	5.00	1806																								
ZZZZZZ	5.00	1810																								
ZZZZZZ	1.00	1813																								
ZZZZZZ	1.00	1817																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062515B 104

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1821																								
ZZZZZZ	5.00	1825																								
ZZZZZZ	5.00	1828																								
ZZZZZZ	5.00	1832																								
ZZZZZZ	5.00	1836																								
ZZZZZZ	5.00	1840																								
ZZZZZZ	5.00	1844																								
ZZZZZZ	5.00	1848																								
ZZZZZZ	5.00	1851																								
ZZZZZZ	5.00	1855																								
ZZZZZZ	5.00	1859																								
ZZZZZZ	1.00	1903																								
ZZZZZZ	1.00	1906																								
ZZZZZZ	1.00	1910																								
ZZZZZZ	50.00	1914																								
ZZZZZZ	50.00	1918																								
ZZZZZZ	50.00	1921																								
ZZZZZZ	50.00	1925																								
ZZZZZZ	5.00	1929																								
ZZZZZZ	5.00	1932																								
ZZZZZZ	1.00	1936																								
ZZZZZZ	1.00	1940																								
ZZZZZZ	1.00	1944																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-046

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A062515B 104

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	10:47																									
BLK	1.00	10:51					X																				
STANDARD 1	1.00	10:54					X																				
STANDARD 2	1.00	10:58					X																				
STANDARD 3	1.00	11:02					X																				
STANDARD 4	1.00	11:06					X																				
STANDARD 5	1.00	11:09					X																				
ICV	1.00	11:13					X																				
ICB1	1.00	11:17					X																				
ZZZZZZ	1.00	11:20																									
ICS-A1	1.00	11:24					X																				
ICS-AB1	1.00	11:28					X																				
ZZZZZZ	1.00	11:32																									
ZZZZZZ	1.00	11:35																									
LLICV	1.00	11:39					X																				
ZZZZZZ	1.00	11:43																									
ZZZZZZ	1.00	11:47																									
ZZZZZZ	1.00	11:50																									
ZZZZZZ	10.00	11:54																									
ZZZZZZ	10.00	11:58																									
ZZZZZZ	1.00	12:05																									
ZZZZZZ	1.00	12:09																									
ZZZZZZ	1.00	12:13																									
ZZZZZZ	1.00	12:16																									
ZZZZZZ	1.00	12:20																									
ZZZZZZ	1.00	12:24																									
ZZZZZZ	1.00	12:28																									
ZZZZZZ	1.00	12:35																									
ZZZZZZ	1.00	12:48																									
ZZZZZZ	1.00	12:52																									
ZZZZZZ	5.00	12:55																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM046|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-046

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062515B 104

Start Date: 6/25/2015 **End Date:** 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	5.00	12:59																										
ZZZZZZ	5.00	13:03																										
ZZZZZZ	1.00	13:06																										
ZZZZZZ	1.00	13:10																										
ZZZZZZ	1.00	13:14																										
ZZZZZZ	5.00	13:18																										
ZZZZZZ	5.00	13:21																										
ZZZZZZ	5.00	13:25																										
ZZZZZZ	5.00	13:29																										
ZZZZZZ	5.00	13:33																										
ZZZZZZ	5.00	13:37																										
ZZZZZZ	5.00	13:41																										
ZZZZZZ	5.00	13:44																										
CCV4	1.00	13:48					X																					
CCB4	1.00	13:52					X																					
LLCCV	1.00	13:56					X																					
2196786	1.00	14:18					X																					
2196787	1.00	14:22					X																					
ZZZZZZ	20.00	14:26																										
2078952002	1.00	14:34					X																					
2078952003	1.00	14:37					X																					
2078952004	1.00	14:41					X																					
2078952005	1.00	14:45					X																					
2078952005L	5.00	14:49																										
ZZZZZZ	1.00	14:52																										
ZZZZZZ	1.00	14:56																										
CCV5	1.00	15:00					X																					
CCB5	1.00	15:03					X																					
LLCCV	1.00	15:07					X																					
ZZZZZZ	1.00	15:11																										
ZZZZZZ	1.00	15:15																										

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM046|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-046

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062515B 104

Start Date: 6/25/2015 **End Date:** 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	15:18																										
ZZZZZZ	1.00	15:22																										
ZZZZZZ	1.00	15:30																										
ZZZZZZ	1.00	15:33																										
ZZZZZZ	1.00	15:37																										
ZZZZZZ	1.00	15:41																										
ZZZZZZ	1.00	15:44																										
ZZZZZZ	1.00	15:48																										
ZZZZZZ	1.00	15:52																										
ZZZZZZ	5.00	15:56																										
ZZZZZZ	5.00	15:59																										
ZZZZZZ	5.00	16:03																										
ZZZZZZ	1.00	16:07																										
ZZZZZZ	1.00	16:11																										
ZZZZZZ	1.00	16:14																										
ZZZZZZ	1.00	16:18																										
ZZZZZZ	1.00	16:22																										
ZZZZZZ	1.00	16:25																										
ZZZZZZ	1.00	16:29																										
ZZZZZZ	1.00	16:33																										
ZZZZZZ	1.00	16:37																										
ZZZZZZ	5.00	16:47																										
ZZZZZZ	5.00	16:51																										
ZZZZZZ	5.00	16:54																										
ZZZZZZ	5.00	16:58																										
ZZZZZZ	5.00	17:02																										
ZZZZZZ	5.00	17:06																										
ZZZZZZ	5.00	17:09																										
ZZZZZZ	5.00	17:13																										
ZZZZZZ	5.00	17:17																										
ZZZZZZ	5.00	17:21																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM046|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-046

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062515B 104

Start Date: 6/25/2015 **End Date:** 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	17:24																									
ZZZZZZ	1.00	17:28																									
ZZZZZZ	1.00	17:32																									
ZZZZZZ	5.00	17:36																									
ZZZZZZ	5.00	17:39																									
ZZZZZZ	5.00	17:43																									
ZZZZZZ	5.00	17:47																									
ZZZZZZ	5.00	17:51																									
ZZZZZZ	5.00	17:54																									
ZZZZZZ	5.00	17:58																									
ZZZZZZ	5.00	18:02																									
ZZZZZZ	5.00	18:06																									
ZZZZZZ	5.00	18:10																									
ZZZZZZ	1.00	18:13																									
ZZZZZZ	1.00	18:17																									
ZZZZZZ	1.00	18:21																									
ZZZZZZ	5.00	18:25																									
ZZZZZZ	5.00	18:28																									
ZZZZZZ	5.00	18:32																									
ZZZZZZ	5.00	18:36																									
ZZZZZZ	5.00	18:40																									
ZZZZZZ	5.00	18:44																									
ZZZZZZ	5.00	18:48																									
ZZZZZZ	5.00	18:51																									
ZZZZZZ	5.00	18:55																									
ZZZZZZ	5.00	18:59																									
ZZZZZZ	1.00	19:03																									
ZZZZZZ	1.00	19:06																									
ZZZZZZ	1.00	19:10																									
ZZZZZZ	50.00	19:14																									
ZZZZZZ	50.00	19:18																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM046|112IC06247

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-046

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062515B 104

Start Date: 6/25/2015 **End Date:** 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	50.00	19:21																									
ZZZZZZ	50.00	19:25																									
ZZZZZZ	5.00	19:29																									
ZZZZZZ	5.00	19:32																									
ZZZZZZ	1.00	19:36																									
ZZZZZZ	1.00	19:40																									
ZZZZZZ	1.00	19:44																									

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	1047												
BLK	BLK	1051	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	1054	97		97		96		96		116		113	
STANDARD 2	STANDARD 2	1058	102		101		103		102		110		112	
STANDARD 3	STANDARD 3	1102	103		100		103		102		114		113	
STANDARD 4	STANDARD 4	1106	103		100		102		103		114		112	
STANDARD 5	STANDARD 5	1109	104		101		104		104		110		114	
ICV	ICV	1113	103		101		103		104		114		112	
ICB1	ICB	1117	102		100		101		101		107		111	
LLICV	ZZZZZZ	1120												
ICS-A1	ICSA	1124	91		100		96		102		111		115	
ICS-AB1	ICSAB	1128	93		101		98		103		115		114	
CHECK	ZZZZZZ	1132												
CHECK	ZZZZZZ	1135												
LLICV	LLICV	1139	104		100		104		102		106		113	
2196594	ZZZZZZ	1143												
2196595	ZZZZZZ	1147												
2196596	ZZZZZZ	1150												
2077679002	ZZZZZZ	1154												
2077679003	ZZZZZZ	1158												
CCV1	ZZZZZZ	1205												
CCB1	ZZZZZZ	1209												
2196963	ZZZZZZ	1213												
2196964	ZZZZZZ	1216												
2078395002	ZZZZZZ	1220												
2196965	ZZZZZZ	1224												
2196966	ZZZZZZ	1228												
CCV2	ZZZZZZ	1235												
CCB2	ZZZZZZ	1248												
LLCCV	ZZZZZZ	1252												
2196548	ZZZZZZ	1255												
2196549	ZZZZZZ	1259												
2078300002	ZZZZZZ	1303												
CCV3	ZZZZZZ	1306												
CCB3	ZZZZZZ	1310												
LLCCV	ZZZZZZ	1314												
2078840001	ZZZZZZ	1318												
2078840002	ZZZZZZ	1321												
2078840003	ZZZZZZ	1325												
2078843001	ZZZZZZ	1329												
2078843008	ZZZZZZ	1333												
2196550	ZZZZZZ	1337												
2196551	ZZZZZZ	1341												
2078843008P	ZZZZZZ	1344												

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15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
CCV4	CCV	1348	108		102		108		104		108		114	
CCB4	CCB	1352	106		99		106		101		109		111	
LLCCV	LLCCV	1356	106		99		105		101		107		111	
2196786	MB for HBN 81077	1418	100		123		100		94		101		108	
2196787	LCS for HBN 8107	1422	100		120		100		96		103		109	
2078302001	ZZZZZZ	1426												
2078952002	MRC-MW14B-062415	1434	93		121		97		96		104		109	
2078952003	MRC-MW12A-062415	1437	98		117		99		95		100		110	
2078952004	MRC-MW12B-062415	1441	100		120		101		96		103		111	
2078952005	MRC-MW14A-062415	1445	89		112		94		93		105		109	
2078952005L	MRC-MW14A-062415	1449	99		100		101		98		113		112	
2078604001	ZZZZZZ	1452												
2078605001	ZZZZZZ	1456												
CCV5	CCV	1500	109		101		109		103		113		115	
CCB5	CCB	1503	107		102		107		102		112		116	
LLCCV	LLCCV	1507	108		99		108		102		111		114	
2078603001	ZZZZZZ	1511												
2196788	ZZZZZZ	1515												
2196789	ZZZZZZ	1518												
2078606001	ZZZZZZ	1522												
2078603001	ZZZZZZ	1530												
2078603001S	ZZZZZZ	1533												
2078603001S	ZZZZZZ	1537												
2078606001	ZZZZZZ	1541												
CCV6	ZZZZZZ	1544												
CCB6	ZZZZZZ	1548												
LLCCV	ZZZZZZ	1552												
2078455001	ZZZZZZ	1556												
2078455002	ZZZZZZ	1559												
2078762001	ZZZZZZ	1603												
CHECK	ZZZZZZ	1607												
CHECK	ZZZZZZ	1611												
CHECK	ZZZZZZ	1614												
CHECK	ZZZZZZ	1618												
CHECK	ZZZZZZ	1622												
CHECK	ZZZZZZ	1625												
CCV7	ZZZZZZ	1629												
CCB7	ZZZZZZ	1633												
LLCCV	ZZZZZZ	1637												
2196094	ZZZZZZ	1647												
2196096	ZZZZZZ	1651												
2196103	ZZZZZZ	1654												
2196105	ZZZZZZ	1658												
2078323001	ZZZZZZ	1702												

6020 3015

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2077438014	ZZZZZZ	1706												
2196099	ZZZZZZ	1709												
2196100	ZZZZZZ	1713												
2077438014P	ZZZZZZ	1717												
2077438015	ZZZZZZ	1721												
CCV8	ZZZZZZ	1724												
CCB8	ZZZZZZ	1728												
LLCCV	ZZZZZZ	1732												
2077438016	ZZZZZZ	1736												
2077438017	ZZZZZZ	1739												
2077438018	ZZZZZZ	1743												
2077438019	ZZZZZZ	1747												
2077438020	ZZZZZZ	1751												
2077438021	ZZZZZZ	1754												
2077438022	ZZZZZZ	1758												
2077438023	ZZZZZZ	1802												
2077438024	ZZZZZZ	1806												
2077721001	ZZZZZZ	1810												
CCV9	ZZZZZZ	1813												
CCB9	ZZZZZZ	1817												
LLCCV	ZZZZZZ	1821												
2077721002	ZZZZZZ	1825												
2077721003	ZZZZZZ	1828												
2077721004	ZZZZZZ	1832												
2077721005	ZZZZZZ	1836												
2077721006	ZZZZZZ	1840												
2077721007	ZZZZZZ	1844												
2077721008	ZZZZZZ	1848												
2077721009	ZZZZZZ	1851												
2077721010	ZZZZZZ	1855												
2077721011	ZZZZZZ	1859												
CCV10	ZZZZZZ	1903												
CCB10	ZZZZZZ	1906												
LLCCV	ZZZZZZ	1910												
2077935002	ZZZZZZ	1914												
2196108	ZZZZZZ	1918												
2196109	ZZZZZZ	1921												
2077935002P	ZZZZZZ	1925												
CHECK	ZZZZZZ	1929												
CHECK	ZZZZZZ	1932												
CCV11	ZZZZZZ	1936												
CCB11	ZZZZZZ	1940												
LLCCV	ZZZZZZ	1944												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

EPA Sample No.	Time	Internal Standards %RI For: Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1047												
BLK	1051	100											
STANDARD 1	1054	96											
STANDARD 2	1058	102											
STANDARD 3	1102	101											
STANDARD 4	1106	103											
STANDARD 5	1109	103											
ICV	1113	103											
ICB	1117	101											
ZZZZZZ	1120												
ICSA	1124	103											
ICSAB	1128	103											
ZZZZZZ	1132												
ZZZZZZ	1135												
LLICV	1139	104											
ZZZZZZ	1143												
ZZZZZZ	1147												
ZZZZZZ	1150												
ZZZZZZ	1154												
ZZZZZZ	1158												
ZZZZZZ	1205												
ZZZZZZ	1209												
ZZZZZZ	1213												
ZZZZZZ	1216												
ZZZZZZ	1220												
ZZZZZZ	1224												
ZZZZZZ	1228												
ZZZZZZ	1235												
ZZZZZZ	1248												
ZZZZZZ	1252												
ZZZZZZ	1255												
ZZZZZZ	1259												
ZZZZZZ	1303												
ZZZZZZ	1306												
ZZZZZZ	1310												
ZZZZZZ	1314												
ZZZZZZ	1318												
ZZZZZZ	1321												
ZZZZZZ	1325												
ZZZZZZ	1329												
ZZZZZZ	1333												
ZZZZZZ	1337												
ZZZZZZ	1341												
ZZZZZZ	1344												
CCV	1348	108											

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
CCB	1352	106											
LLCCV	1356	106											
MB for HBN 81077	1418	102											
LCS for HBN 8107	1422	102											
ZZZZZZ	1426												
MRC-MW14B-062415	1434	101											
MRC-MW12A-062415	1437	102											
MRC-MW12B-062415	1441	102											
MRC-MW14A-062415	1445	97											
MRC-MW14A-062415	1449	103											
ZZZZZZ	1452												
ZZZZZZ	1456												
CCV	1500	108											
CCB	1503	107											
LLCCV	1507	107											
ZZZZZZ	1511												
ZZZZZZ	1515												
ZZZZZZ	1518												
ZZZZZZ	1522												
ZZZZZZ	1530												
ZZZZZZ	1533												
ZZZZZZ	1537												
ZZZZZZ	1541												
ZZZZZZ	1544												
ZZZZZZ	1548												
ZZZZZZ	1552												
ZZZZZZ	1556												
ZZZZZZ	1559												
ZZZZZZ	1603												
ZZZZZZ	1607												
ZZZZZZ	1611												
ZZZZZZ	1614												
ZZZZZZ	1618												
ZZZZZZ	1622												
ZZZZZZ	1625												
ZZZZZZ	1629												
ZZZZZZ	1633												
ZZZZZZ	1637												
ZZZZZZ	1647												
ZZZZZZ	1651												
ZZZZZZ	1654												
ZZZZZZ	1658												
ZZZZZZ	1702												
ZZZZZZ	1706												
ZZZZZZ	1709												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-046

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/25/2015 End Date: 06/25/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1713												
ZZZZZZ	1717												
ZZZZZZ	1721												
ZZZZZZ	1724												
ZZZZZZ	1728												
ZZZZZZ	1732												
ZZZZZZ	1736												
ZZZZZZ	1739												
ZZZZZZ	1743												
ZZZZZZ	1747												
ZZZZZZ	1751												
ZZZZZZ	1754												
ZZZZZZ	1758												
ZZZZZZ	1802												
ZZZZZZ	1806												
ZZZZZZ	1810												
ZZZZZZ	1813												
ZZZZZZ	1817												
ZZZZZZ	1821												
ZZZZZZ	1825												
ZZZZZZ	1828												
ZZZZZZ	1832												
ZZZZZZ	1836												
ZZZZZZ	1840												
ZZZZZZ	1844												
ZZZZZZ	1848												
ZZZZZZ	1851												
ZZZZZZ	1855												
ZZZZZZ	1859												
ZZZZZZ	1903												
ZZZZZZ	1906												
ZZZZZZ	1910												
ZZZZZZ	1914												
ZZZZZZ	1918												
ZZZZZZ	1921												
ZZZZZZ	1925												
ZZZZZZ	1929												
ZZZZZZ	1932												
ZZZZZZ	1936												
ZZZZZZ	1940												
ZZZZZZ	1944												

6010C 3015

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.968	1.000	97		90 - 110	P	6/25/2015	11:22	062515B 30
CCV	Iron	2.500	2.500	100		90 - 110	P	6/25/2015	11:34	062515B 30
CCV	Iron	2.487	2.500	99		90 - 110	P	6/25/2015	13:15	062515B 30
CCV	Iron	2.566	2.500	103		90 - 110	P	6/25/2015	14:00	062515B 30
CCV	Iron	2.425	2.500	97		90 - 110	P	6/25/2015	14:40	062515B 30
LLCCV	Iron	0.063	0.060	105		70 - 130	P	6/25/2015	14:47	062515B 30

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CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.062	0.060	103		70 - 130	P	6/25/2015	11:31	062515B 3

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	6/25/2015	11:27	062515B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	6/25/2015	13:18	062515B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	6/25/2015	14:03	062515B 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	6/25/2015	14:43	062515B 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2196778			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	6/25/2015	14:07	062515B 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	112.4	125.0	90		80 - 120%	6/25/2015	11:41	062515B 3015
ICSAB									
	Iron	115.7	125.0	93		80 - 120%	6/25/2015	11:45	062515B 3015
ICSA									
	Iron	113.3	125.0	91		80 - 120%	6/25/2015	14:51	062515B 3015
ICSAB									
	Iron	114.4	125.0	92		80 - 120%	6/25/2015	14:54	062515B 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2196779									
	Iron	mg/L	1.11	1.141		103		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-046

Contract: TMM046|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	81075						
2078952002	MRC-MW14B-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952003	MRC-MW12A-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952004	MRC-MW12B-062415	SAM	WATER	6/25/15	45.0	50.0	
2078952005	MRC-MW14A-062415	SAM	WATER	6/25/15	45.0	50.0	
2196778	MB for HBN 81075 [MDIG/51481	MB	QC-WAT	6/25/15	45.0	50.0	
2196779	LCS for HBN 81075 [MDIG/51481	LCS	QC-WAT	6/25/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062515B 3015

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	1100												X													
ICAL2	1.00	1104												X													
ICAL3	1.00	1108												X													
ICAL4	1.00	1111												X													
ICAL5	1.00	1115												X													
ZZZZZZ	1.00	1118																									
ICV2	1.00	1122												X													
ICB1	1.00	1127												X													
CRDL1	1.00	1131												X													
CCV1	1.00	1134												X													
HIGH	1.00	1138												X													
ICS-A1	1.00	1141												X													
ICS-AB1	1.00	1145												X													
ZZZZZZ	1.00	1151																									
ZZZZZZ	1.00	1155																									
ZZZZZZ	5.00	1159																									
ZZZZZZ	1.00	1203																									
ZZZZZZ	1.00	1206																									
ZZZZZZ	1.00	1210																									
ZZZZZZ	1.00	1214																									
ZZZZZZ	1.00	1217																									
ZZZZZZ	1.00	1221																									
ZZZZZZ	1.00	1225																									
ZZZZZZ	1.00	1228																									
ZZZZZZ	1.00	1232																									
ZZZZZZ	1.00	1236																									
ZZZZZZ	1.00	1239																									
ZZZZZZ	1.00	1243																									
ZZZZZZ	1.00	1248																									
ZZZZZZ	1.00	1252																									
ZZZZZZ	2.00	1256																									
ZZZZZZ	1.00	1300																									
ZZZZZZ	1.00	1303																									
ZZZZZZ	1.00	1307																									
ZZZZZZ	1.00	1311																									
CCV3	1.00	1315												X													

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062515B 3015

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB2	1.00	1318												X													
ZZZZZZ	1.00	1322																									
ZZZZZZ	1.00	1326																									
ZZZZZZ	1.00	1329																									
ZZZZZZ	1.00	1333																									
ZZZZZZ	5.00	1337																									
ZZZZZZ	5.00	1341																									
2078952002	1.00	1345												X													
2078952003	1.00	1348												X													
2078952004	1.00	1352												X													
2078952005	1.00	1356												X													
CCV4	1.00	1400												X													
CCB3	1.00	1403												X													
2196778	1.00	1407												X													
2196779	1.00	1411												X													
ZZZZZZ	5.00	1414																									
ZZZZZZ	1.00	1418																									
ZZZZZZ	5.00	1422																									
ZZZZZZ	2.00	1426																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1436																									
CCV5	1.00	1440												X													
CCB4	1.00	1443												X													
LLCCV	1.00	1447												X													
ICS-A2	1.00	1451												X													
ICS-AB2	1.00	1454												X													
ZZZZZZ	1.00	1501																									
ZZZZZZ	1.00	1505																									
ZZZZZZ	1.00	1509																									
ZZZZZZ	1.00	1513																									
ZZZZZZ	1.00	1516																									
ZZZZZZ	1.00	1520																									
ZZZZZZ	1.00	1524																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1531																									
ZZZZZZ	1.00	1535																									

6010C 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM046|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-046

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062515B 3015

Start Date: 6/25/2015 End Date: 6/25/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1539																								
ZZZZZZ	1.00	1542																								
ZZZZZZ	1.00	1546																								
ZZZZZZ	1.00	1550																								
ZZZZZZ	1.00	1554																								
ZZZZZZ	1.00	1557																								
ZZZZZZ	1.00	1601																								
ZZZZZZ	1.00	1605																								
ZZZZZZ	1.00	1609																								
ZZZZZZ	1.00	1612																								
ZZZZZZ	1.00	1616																								
ZZZZZZ	1.00	1619																								
ZZZZZZ	1.00	1623																								
ZZZZZZ	1.00	1627																								
ZZZZZZ	1.00	1630																								
ZZZZZZ	1.00	1634																								
ZZZZZZ	1.00	1638																								
ZZZZZZ	1.00	1642																								
ZZZZZZ	1.00	1645																								
ZZZZZZ	1.00	1649																								
ZZZZZZ	1.00	1653																								
ZZZZZZ	1.00	1658																								
ZZZZZZ	1.00	1701																								
ZZZZZZ	1.00	1705																								
ZZZZZZ	1.00	1709																								
ZZZZZZ	1.00	1713																								
ZZZZZZ	1.00	1717																								
ZZZZZZ	1.00	1720																								
ZZZZZZ	1.00	1724																								

Form 4B
Inorganic Blank Summary

Analysis Method: 300.0 SDG No.: TMM-046

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)6/25/15	(2)	Continuing Calibration Blanks (mg/L) (1)6/25/15	(2)	(1)6/26/15	(2)	(1)6/26/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Chloride	0.13	J	0.10	J	0.09	J	0.11	J				
Nitrite-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Nitrate-Nitrogen	0.10	U	0.10	U	0.10	U	0.10	U				
Sulfate	1.0	U	0.50	J	0.06	J	0.04	J				

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-046

Instrument ID: ICS2000 (IC-5)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/26/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	20.0	20.0	100		90-110	20.0	--	--		20.5	103		90-110
Nitrite-Nitrogen	0.50	0.51	102		90-110	0.50	--	--		0.54	108		90-110
Nitrate-Nitrogen	2.50	2.54	102		90-110	2.50	--	--		2.57	103		90-110
Sulfate	20.0	20.3	101		90-110	20.0	--	--		20.6	103		90-110
Chloride	40.0	40.9	102		90-110	40.0	41.6	104		--	--		90-110
Nitrite-Nitrogen	1.00	1.04	104		90-110	1.00	1.07	107		--	--		90-110
Nitrate-Nitrogen	5.00	5.07	101		90-110	5.00	5.14	103		--	--		90-110
Sulfate	40.0	39.2	98		90-110	40.0	39.9	100		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-046

Instrument ID: ICS2000 (IC-5)
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/26/15	Recovery (%)	(2)	Acc. Limit (%)
Chloride	2.50	2.59	104		90-110	2.50	--	--		2.74	110		90-110
Nitrite-Nitrogen	0.50	0.50	100		90-110	0.50	--	--		0.52	104		90-110
Nitrate-Nitrogen	0.50	0.53	106		90-110	0.50	--	--		0.54	108		90-110
Sulfate	2.50	2.68	107		90-110	2.50	--	--		2.69	108		90-110
Chloride	5.00	4.80	96		90-110	5.00	4.92	98		--	--		90-110
Nitrite-Nitrogen	1.00	0.93	93		90-110	1.00	0.95	95		--	--		90-110
Nitrate-Nitrogen	1.00	0.98	98		90-110	1.00	0.99	99		--	--		90-110
Sulfate	5.00	4.93	99		90-110	5.00	4.99	100		--	--		90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method A
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-046

Instrument ID: ICS2000 (IC-5)
Concentration Units: mg/L

Analyte	Continuing Calibration											
	True Conc.	Conc. Recovered (1)6/26/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)	
Chloride	20.0	--	--								90-110	
Nitrite-Nitrogen	0.50	--	--								90-110	
Nitrate-Nitrogen	2.50	--	--								90-110	
Sulfate	20.0	--	--								90-110	
Chloride	40.0	41.8	105								90-110	
Nitrite-Nitrogen	1.00	1.07	107								90-110	
Nitrate-Nitrogen	5.00	5.15	103								90-110	
Sulfate	40.0	39.7	99								90-110	

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 6B2- Method L
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 300.0 SDG No.: TMM-046

Instrument ID: ICS2000 (IC-5)
Concentration Units: mg/L

Analyte	Continuing Calibration										
	True Conc.	Conc. Recovered (1)6/26/15	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Conc. Recovered (1)	Recovery (%) (2)		Acc. Limit (%)
Chloride	2.50	--	--								90-110
Nitrite-Nitrogen	0.50	--	--								90-110
Nitrate-Nitrogen	0.50	--	--								90-110
Sulfate	2.50	--	--								90-110
Chloride	5.00	4.98	100								90-110
Nitrite-Nitrogen	1.00	0.95	95								90-110
Nitrate-Nitrogen	1.00	0.99	99								90-110
Sulfate	5.00	5.03	101								90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method A
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-046

Matrix (soil/water): water
Lab Sample ID: 2197073
Units: mg/L
Lab File ID: N/A
Date Analyzed: 6/25/15
Instrument ID: ICS2000 (IC-5)
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	20.0	20.5	102		90-110
Nitrite-nitrogen	0.50	0.55	110		90-110
Nitrate-nitrogen	2.50	2.56	102		90-110
Sulfate	20.0	32.3	162	*	90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B- Method L
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 300.0
SDG No.: TMM-046

Matrix (soil/water): water
Lab Sample ID: SSL
Units: mg/L
Lab File ID: N/A
Date Analyzed: 6/25/15
Instrument ID: ICS2000 (IC-5)
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Chloride	2.50	2.58	103		90-110
Nitrite-nitrogen	0.50	0.50	100		90-110
Nitrate-nitrogen	0.50	0.52	104		90-110
Sulfate	2.50	2.58	103		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 4500NH3D

SDG No.: TMM-046

Prep Blank A Matrix (soil/water): water

Units: mg/L

Prep Blank B Matrix (soil/water):

Units:

Analyte	Initial Calibration Blank (mg/L) (1)6/26/15	(2)	Continuing Calibration Blanks (mg/L) (1)6/26/15	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID:2197117 (1)6/26/15	(2)	Preparation Blank B ID: (1)	(2)
Total Ammonia-Nitrogen	0.04	J	0.07	J					0.07	J		

(1) Analysis Date

(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 4500NH3D

SDG No.: TMM-046

Instrument ID: ISE

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration						
	True Conc.	Conc. Recovered (1)6/26/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/26/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Ammonia-Nitrogen	10.0	9.52	95		90-110	10.0	9.44	94					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 4500NH3D
SDG No.: TMM-046

Matrix (soil/water): water
Lab Sample ID: 2197118
Units: mg/L
Lab File ID: N/A
Date Analyzed: 6/26/15
Instrument ID: ISE
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Ammonia-Nitrogen	10.0	9.13	91		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Total Dissolved Solids

Batch: 155979 Queue: Analyst: NV FALSE

File Name: 155979_150625-193215 Date/Time: 06/25/15 18:00

Misc:	LCS Standard ID: WS150622008							1st Time In	06/25/15 1922	2nd Time In	6/26/15 0824
								1st Temp In °C	104	2nd Temp In °C	180
	TEMP	------			Difference →	0.0000		1st Time Out	6/26/15 0824	2nd Time Out	6/29/15 1829
	LCS				TDS (mg/l) →	#DIV/0!		1st Temp Out °C	104	2nd Temp Out °C	180

	Sample ID	Cont ID	Samp Type	TVS	Volume (ml)	Weight dish (g)	Weight dish and sample (g)				TDS (mg/l)	Result1 IVOL (ml)	Result2 TARE (g)	Result3 FWT (g)	Alk
	2197181	BALCHK			0	100.0005	100.0002				#DIV/0!	0	100.0005	100.0002	
	2197182		TPB		100	111.5766	111.5785				19	100	111.5766	111.5785	
*	2197183		MB		100	95.0606	95.0610				4	100	95.0606	95.0610	
*	2197184		LCS		100	95.6079	95.6570				491	100	95.6079	95.6570	
	2078923002	A	S		100	110.9703	111.0486				783	100	110.9703	111.0486	
	2078926002	A	S		5	94.5024	94.8919				77900	5	94.5024	94.8919	
	2078939001	A	S		100	86.9817	87.0376				559	100	86.9817	87.0376	
	2078939002	A	S		100	87.5604	87.5869				265	100	87.5604	87.5869	
	2078939003	A	S		100	89.5626	89.6193				567	100	89.5626	89.6193	
	2078939004	A	S		100	93.8609	93.8989				380	100	93.8609	93.8989	
*	2078952002	H	S		100	89.0488	89.1760				1272	100	89.0488	89.1760	
*	2078952003	H	S		100	92.1946	92.2276				330	100	92.1946	92.2276	
*	2197185		DUP		100	99.0234	99.0429				195	100	99.0234	99.0429	
*	2078952004	H	S		100	94.0459	94.0653				194	100	94.0459	94.0653	
	2078599006	B	S		100	90.5663	90.6055				392	100	90.5663	90.6055	291.00
	2078599007	B	S		100	97.2369	97.2988				619	100	97.2369	97.2988	
	2078599008	B	S		100	101.1947	101.2581				634	100	101.1947	101.2581	466.00
	2078599009	B	S		100	89.2862	89.3352				490	100	89.2862	89.3352	368.00
	2078599010	B	S		100	86.1339	86.1764				425	100	86.1339	86.1764	273.00
	2078600001		S		100	95.8934	96.2904				3970	100	95.8934	96.2904	
	2078600002	A	S		100	107.4731	107.5845				1114	100	107.4731	107.5845	
	2197186		DUP		100	95.7293	95.8444				1151	100	95.7293	95.8444	
	2078603001	J	S		100	96.7209	96.7564				355	100	96.7209	96.7564	233.00
	2078605001	J	S		100	99.0449	99.0713				264	100	99.0449	99.0713	219.00
	2078606001	J	S		100	97.2293	97.2961				668	100	97.2293	97.2961	495.00
	2197187	BALCHK			0	100.0005	100.0002				#DIV/0!	0	100.0005	100.0002	

End

ANALYST NV
ENTER REVIEW
SECOND REVIEW CF 6/30/15
APPROVED CF 6/30/15

ALMDT.NOUSER

Form 4B
Inorganic Blank Summary

Analysis Method: 5310B SDG No.: TMM-046

Prep Blank A Matrix (soil/water): _____ Units: _____

Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)6/25/15	(2)	Continuing Calibration Blanks (mg/L) (1)6/25/15	(2)	(1)6/25/15	(2)	(1)6/25/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 4B2
Inorganic Blank Summary

Analysis Method: 5310B SDG No.: TMM-046

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Continuing Calibration Blanks (mg/L)								Preparation Blank A		Preparation Blank B	
	(1)6/25/15	(2)	(1)	(2)	(1)	(2)	(1)	(2)	ID: (1)	(2)	ID: (1)	(2)
Total Organic Carbon	1.0	U										

(1) Analysis Date:

(2) The following qualifiers are used U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 5310B

SDG No.: TMM-046

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.97	97		85-115	5.00	4.97	99		--	--		90-110
						8.00	--	--		8.03	100		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 6B2
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 5310B

SDG No.: TMM-046

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Continuing Calibration										
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	5.00	--	--		4.93	99					90-110
	8.00	8.00	100		--	--					90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 2540C SDG No.: TMM-046

Prep Blank A Matrix (soil/water): water Units: mg/L

Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)	(2)	Continuing Calibration Blanks (mg/L) (1)	(2)	(1)	(2)	(1)	(2)	Preparation Blank A ID:2197183 (1)6/25/15	(2)	Preparation Blank B ID: (1)	(2)
Total Dissolved Solids									5	U		

(1) Analysis Date
(2) The following qualifiers are used:

U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Sample Description
MRC-MW12B-062415

Form 7
Duplicate Summary

Analysis Method:	2540C	SDG No.:	TMM-046
Matrix (soil/water):	water	Lab Sample ID:	2078952004
Units:	mg/L	Lab File ID:	N/A
Instrument ID:	N/A	Lab Sample Dup. ID:	2197185
GC Column:	N/A	Dup. Lab File ID:	N/A
Sample % Moisture:	N/A	Dup. % Moisture:	N/A

Analyte	Sample Concentration	Duplicate Concentration	Relative Percent Difference (RPD)	(1)	Acceptable Limit
Total Dissolved Solids	194	195	0.5		5%

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 8B
Laboratory Control Sample (LCS) Recovery Summary

Analysis Method: 2540C
SDG No.: TMM-046

Matrix (soil/water): water
Lab Sample ID: LCS
Units: mg/L
Lab File ID: N/A
Date Analyzed: 6/25/15
Instrument ID: N/A
GC Column: N/A

Analyte	Concentration Added	Concentration Recovered	LCS Recovery (%)	(1)	Acceptable Limits (%)
Total Dissolved Solids	500	491	98		90-110

(1) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Calibration Curve

Date of Analysis	4/4/2015
Time of Analysis	4:40
Tech	MBW
Rev. By / Date	4/4/15
App. By / Date	4/4/15

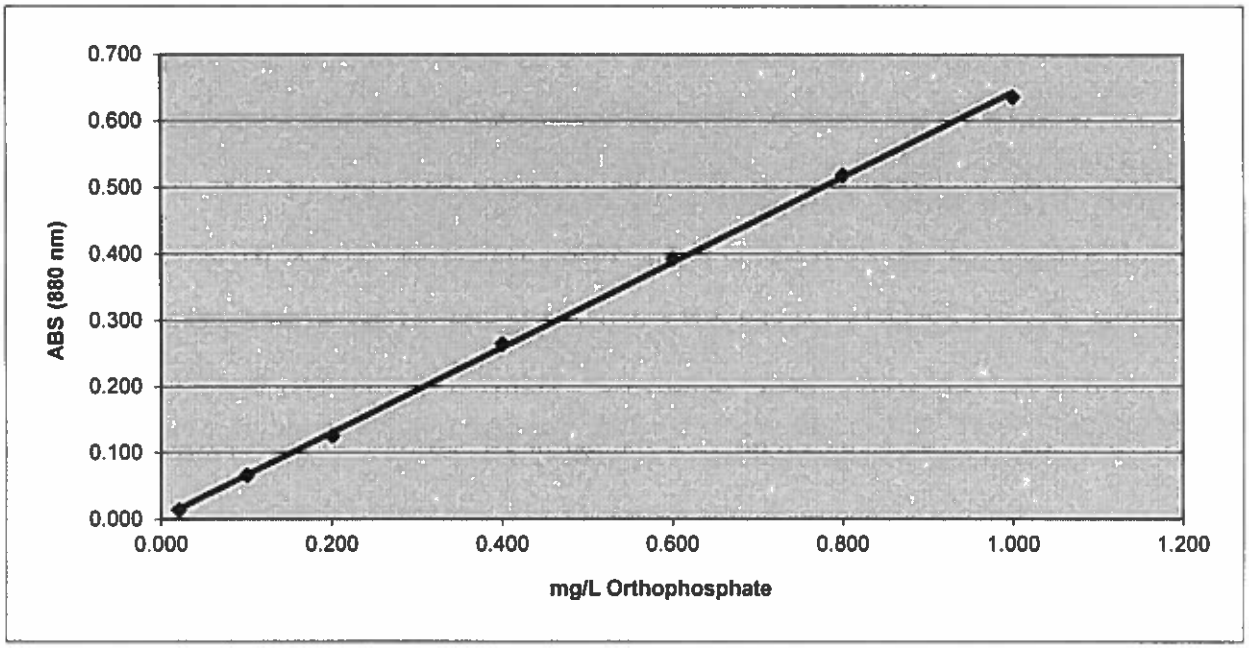
X (mg/l)	Y (ABS)
0.020	0.014
0.100	0.066
0.200	0.125
0.400	0.264
0.600	0.392
0.800	0.518
1.000	0.636

Slope =	0.6403806
Intercept =	0.0024304
r =	0.9995629

Calibration Date	4/4/2015
Curve Expiration Date	7/4/2015
Tech	MBW

$$mg/l = \frac{ABS - 0.002}{0.640}$$

Corr. coeff. = 0.99913 = Curve passed



Sample	ABS	Blank ABS	Corrected ABS	Result (mg/L)	% Recovery
BLANK	0.000	0.000	0.000		
0.020 STD	0.014	0.000	0.014		
0.100 STD	0.066	0.000	0.066		
0.200 STD	0.125	0.000	0.125		
0.400 STD	0.264	0.000	0.264		
0.600 STD	0.392	0.000	0.392		
0.800 STD	0.518	0.000	0.518		
1.00 STD	0.636	0.000	0.636		
CCVL	0.129	0.000	0.129	0.1976	98.8

0.20 CCV	WS150404017	Pipettes	2012-02
Calibration Stds	WS150404009-015		2011-02
Spiking Solution	140825005		04-047
Combined Color Reagent	WR150404001		

Page _____

Orthophosphate

Queue:	WETC
Rule:	365.3WO-P
Batch:	155931
HBN:	81051

Slope =	0.640
Intercept =	0.002
r =	0.9995629

mg/L = (ABS - 0.002) / 0.640

Corr. coeff. = 0.99913 = Curve passed

X (mg/L)	Y (ABS)
0.020	0.014
0.100	0.066
0.200	0.125
0.400	0.264
0.600	0.392
0.800	0.518
1.000	0.636

Reviewed By:	
Reviewed Date:	
Approved By:	
Approved Dare:	

Analysis Date:	6/25/2015
Analysis Time:	4:41:00
Tech:	GMM

Calibration Date:	4/4/2015
Curve Expiration Date:	7/4/2015
Tech:	MBW

Sample	Comment	Dilution	Sample Vol	ABS	Blank ABS	Corrected ABS	Result (mg/L)	% Recovery	RPD %
* 2196649	MB	1	50	0.003	0.000	0.003	0.0016		
* 2196650	CCVL	1	50	0.131	0.000	0.131	0.2016	100.8	
2078556001		25	2	0.212	0.000	0.212	8.2031		
2196651	MS	25	2	0.555	0.000	0.555	21.6016	107.2	
2196652	MSD	25	2	0.564	0.000	0.564	21.9531	110.0	1.6
2078823001		25	2	0.204	0.001	0.203	7.8516		
* 2078952002		1	50	0.075	0.060	0.015	0.0203		
* 2078952003		1	50	0.034	0.013	0.021	0.0297		
* 2078952004		1	50	0.033	0.016	0.017	0.0234		
14A		1	50	0.032	0.014	0.018	0.0250		
2078959002		1	50	0.051	0.004	0.047	0.0703		
2078995004		1	50	0.060	0.004	0.056	0.0844		
2078995005		1	50	0.056	0.004	0.052	0.0781		
* 2196653	MB	1	50	0.003	0.000	0.003	0.0016		
* 2196654	CCVH	1	50	0.531	0.000	0.531	0.8266	103.3	

0.20 CCV:	WS150625011	Pipettes:	2012-02
0.80 CCV:	WS150625010		2011-02
Spiking Solution:	140825005		04-047
Combined Color Reagent:	WR150625004		

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 365.3 SDG No.: TMM-046

Prep Blank A Matrix (soil/water): Units:
Prep Blank B Matrix (soil/water): Units:

Analyte	Initial Calibration Blank (mg/L) (1)6/25/15 (2)		Continuing Calibration Blanks (mg/L) (1)6/25/15 (2)		(1) (2)		(1) (2)		Preparation Blank A ID: (1) (2)		Preparation Blank B ID: (1) (2)	
Orthophosphate	0.02	U	0.02	U								

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 365.3 SDG No.: TMM-046

Instrument ID: DR5000
Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Orthophosphate	0.200	0.202	101		90-110	0.200	--	--					90-110
						0.800	0.827	103					90-110

(1) Analysis Date
(2) The following qualifiers are used:
* : Values outside of acceptable limits

Comments:

Form 4B
Inorganic Blank Summary

Analysis Method: 5310B SDG No.: TMM-046

Prep Blank A Matrix (soil/water): _____ Units: _____

Prep Blank B Matrix (soil/water): _____ Units: _____

Analyte	Initial Calibration Blank (mg/L) (1)6/25/15	(2)	Continuing Calibration Blanks (mg/L) (1)6/25/15	(2)	(1)6/25/15	(2)	(1)6/25/15	(2)	Preparation Blank A ID: (1)	(2)	Preparation Blank B ID: (1)	(2)
Total Organic Carbon	1.0	U	1.0	U	1.0	U	1.0	U				

(1) Analysis Date
(2) The following qualifiers are used:
U: The analyte concentration is less than the reporting limit listed
J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments: _____

Form 4B2
Inorganic Blank Summary

Analysis Method: 5310B SDG No.: TMM-046

Prep Blank A Matrix (soil/water): Units:

Prep Blank B Matrix (soil/water): Units:

Analyte	Continuing Calibration Blanks (mg/L)								Preparation Blank A		Preparation Blank B	
	(1)6/25/15	(2)	(1)	(2)	(1)	(2)	(1)	(2)	ID: (1)	(2)	ID: (1)	(2)
Total Organic Carbon	1.0	U										

(1) Analysis Date:

(2) The following qualifiers are used U: The analyte concentration is less than the reporting limit listed

J: The analyte concentration is less than the reporting limit but greater than the method detection limit

Comments:

Form 6B
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 5310B

SDG No.: TMM-046

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Initial Calibration					Continuing Calibration							
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	1.00	0.97	97		85-115	5.00	4.97	99		--	--		90-110
						8.00	--	--		8.03	100		90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

Form 6B2
Inorganic Initial and Continuing Calibration Summary

Analysis Method: 5310B

SDG No.: TMM-046

Instrument ID: Vario TOC

Concentration Units: mg/L

Analyte	Continuing Calibration										
	True Conc.	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)6/25/15	Recovery (%)	(2)	Conc. Recovered (1)	Recovery (%)	(2)	Acc. Limit (%)
Total Organic Carbon	5.00	--	--		4.93	99					90-110
	8.00	8.00	100		--	--					90-110

(1) Analysis Date

(2) The following qualifiers are used:

* : Values outside of acceptable limits

Comments:

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **AUGUST 26, 2015**

FROM: **L. GANSER** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOCs/1,4-DIOXANE/TOTAL METALS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 2079226

SAMPLES:

10/Aqueous/VOCs

MRC-MW-106B/C-062515	MRC-MW-107B/C-062515	MRC-MW-11C-062515
MRC-MW-12C-062515	MRC-MW-13A-062515	MRC-MW-14C-062515
MRC-MW-63A-062515	MRC-MW-70A-062515	MRC-MW-70B-062515
TB-062515		

7/Aqueous/1,4-Dioxane

MRC-MW-11C-062515	MRC-MW-12C-062515	MRC-MW-13A-062515
MRC-MW-14C-062515	MRC-MW-63A-062515	MRC-MW-70A-062515
MRC-MW-70B-062515		

4/Aqueous/1,4-Dioxane/Metals

MRC-MW-107B/C-062515	MRC-MW-14C-062515	MRC-MW-63A-062515
MRC-MW-70A-062515		

Overview

The sample set for LMC-MRC, SDG 2079226 consisted of nine (9) aqueous environmental samples and one (1) trip blank. Samples were analyzed for volatile organic compounds (VOCs), 1,4-dioxane, and/or metals. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on June 25, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6020A/6010C, 7470A, and 9060A, EPA Method 522 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, trip blank results, Interference Check Sample (ICS), surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, ICP serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major – None.

Minor

- The VOC continuing calibration performed on instrument ms05.i on 6/27/2015 @ 10:28 had percent differences/ percent drift (%Ds) that exceeded the 20% quality control (QC) limit for acetone, 2-butanone, 1,2-dibromo-3-chloropropane, 1,4-dioxane, 2-hexanone, methyl acetate, and 4-methyl-

2-pentanone affecting all samples, except MRC-MW-11C-062515. The results reported for these compounds in the affected samples were qualified as estimated, (J) for detected and (UJ) for nondetected results.

- The VOC continuing calibration performed on instrument ms05.i on 6/29/2015 @ 19:04 had percent differences/ percent drift (%Ds) that exceeded the 20% quality control (QC) limit for acetone, bromomethane, 2-butanone, chloromethane, 1,2-dibromo-3-chloropropane, 1,4-dioxane, 2-hexanone, methyl acetate, and 4-methyl-2-pentanone affecting samples MRC-MW-11C-062515 and MRC-MW-70B-062515 (20X dilution analysis). The results reported for these compounds in the affected samples were qualified as estimated, (J) for detected and (UJ) for nondetected results.

- Surrogate recovery was less than QC limits for MRC-MW-70A-062515 for 1,4-dioxane (method 522). The detected result in this sample was qualified as estimated (J).

- Molybdenum was detected in the laboratory calibration blanks at the following maximum concentrations

Compound	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.011	0.055

Maximum concentration detected in the calibration blank on 6/29/15 @ 11:13 affecting all samples.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Detected results less than the blank action level were qualified as nondetect (U).

- Internal standard %R was greater than 125% for Ge_72 in all samples analyzed for metals by method 6020. Results for arsenic, cadmium, chromium, cobalt, copper, manganese, molybdenum, nickel, selenium, silver, and vanadium were qualified as estimated (J) for detected and (UJ) for nondetected results.

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

- The trip blank contained the following compounds:

Compound	Maximum Concentration (ug/L)	Action Level (ug/L)
Acetone	3.4	34
2-butanone	4	40

Maximum concentrations affected all samples.

An action level of 10X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. Detected results less than the blank action level were qualified as nondetect (U).

Notes

Non-detected results were reported to the MDL.

Results for 1,1-dichloroethene and trichloroethene were reported at a 20X dilution in sample MRC-MW-70B-062515. The results for these compounds in undiluted samples exceeded the calibration range.

The result for 1,4-dioxane (method 522) was reported at a 200X dilution in sample MRC-MW-70B-062515. The result for 1,4-dioxane in the undiluted sample exceeded the calibration range.

Iron was detected in the laboratory calibration blanks at the following maximum concentrations

Compound	Maximum Concentration (mg/L)	Action Level (mg/L)
Iron	0.027	0.135

Maximum concentration detected in the calibration blank on 6/29/15 @ 11:26 affecting all samples.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as all results were greater than the blank action level.

Executive Summary

Laboratory Performance: Calibration noncompliance was noted for several VOCs. Surrogate recovery noncompliance was noted for 1,4-dioxane (EPA method 522). Molybdenum was detected in the laboratory calibration blanks. Internal standard percent recovery was outside QC limits for one internal standard affecting several metals in all samples analyzed by SW-846 method 6020.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Leanne M. Ganser
for Environmental Scientist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 06247	NSAMPLE	MRC-MW-106B/C-062515			MRC-MW-107B/C-062515			MRC-MW-11C-062515			MRC-MW-11C-062515-RE		
SDG: 2079226	LAB_ID	2079226003			2079226010			2079226006			2079226006		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U				
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U				
1,1-DICHLOROETHANE		0.33	J	P	0.28	U		0.28	U				
1,1-DICHLOROETHENE		2.2			0.29	U		0.29	U				
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	UJ	C	1.5	UJ	C	1.5	UJ	C			
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U				
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U				
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U				
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U				
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U				
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U				
1,4-DIOXANE		58.9	UJ	C	58.9	UJ	C				58.9	UJ	C
2-BUTANONE		1.8	UJ	C	1.8	UJ	C	1.8	UJ	C			
2-HEXANONE		1.3	UJ	C	1.3	UJ	C	1.3	UJ	C			
4-METHYL-2-PENTANONE		1.5	UJ	C	1.5	UJ	C	1.5	UJ	C			
ACETONE		3.1	UJ	C	5.1	U	B	3.1	UJ	C			
BENZENE		0.23	U		0.23	U		0.23	U				
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U				
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U				
BROMOFORM		0.4	U		0.4	U		0.4	U				
BROMOMETHANE		0.39	U		0.39	U		0.39	UJ	C			
CARBON DISULFIDE		0.95	J	P	0.23	U		0.23	U				
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U				
CHLOROBENZENE		0.19	U		0.19	U		0.19	U				
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U				
CHLOROETHANE		0.33	U		0.33	U		0.33	U				
CHLOROFORM		0.21	U		0.21	U		0.21	U				
CHLOROMETHANE		0.31	U		0.31	U		0.31	U				
CIS-1,2-DICHLOROETHENE		0.91	J	P	0.32	U		0.32	U				
CIS-1,3-DICHLOROPROPENE		0.31	U		0.31	U		0.31	U				
CYCLOHEXANE		0.29	U		0.29	U		0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-12C-062515			MRC-MW-12C-062515-RE			MRC-MW-13A-062515			MRC-MW-13A-062515-RE		
SDG: 2079226	LAB_ID	2079226007			2079226007			2079226008			2079226008		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U				
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U				
1,1-DICHLOROETHANE		0.28	U					0.33	J	P			
1,1-DICHLOROETHENE		0.29	U					2.3					
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	UJ	C				1.5	UJ	C			
1,2-DIBROMOETHANE		0.28	U					0.28	U				
1,2-DICHLOROBENZENE		0.38	U					0.38	U				
1,2-DICHLOROETHANE		0.32	U					0.32	U				
1,2-DICHLOROPROPANE		0.24	U					0.24	U				
1,3-DICHLOROBENZENE		0.25	U					0.25	U				
1,4-DICHLOROBENZENE		0.27	U					0.27	U				
1,4-DIOXANE					58.9	UJ	C				58.9	UJ	C
2-BUTANONE		1.8	UJ	C				1.8	UJ	C			
2-HEXANONE		1.3	UJ	C				1.3	UJ	C			
4-METHYL-2-PENTANONE		1.5	UJ	C				1.5	UJ	C			
ACETONE		3.1	UJ	C				3.1	UJ	C			
BENZENE		0.23	U					0.31	J	P			
BROMOCHLOROMETHANE		0.32	U					0.32	U				
BROMODICHLOROMETHANE		0.27	U					0.27	U				
BROMOFORM		0.4	U					0.4	U				
BROMOMETHANE		0.39	U					0.39	U				
CARBON DISULFIDE		0.23	U					0.23	U				
CARBON TETRACHLORIDE		0.31	U					0.31	U				
CHLOROBENZENE		0.19	U					0.19	U				
CHLORODIBROMOMETHANE		0.45	U					0.45	U				
CHLOROETHANE		0.33	U					0.33	U				
CHLOROFORM		0.21	U					0.21	U				
CHLOROMETHANE		0.31	U					0.31	U				
CIS-1,2-DICHLOROETHENE		0.32	U					1.2					
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U				
CYCLOHEXANE		0.29	U					0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-14C-062515			MRC-MW-14C-062515-RE			MRC-MW-63A-062515			MRC-MW-63A-062515-RE		
SDG: 2079226	LAB_ID	2079226002			2079226002			2079226009			2079226009		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U				
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U					0.33	U				
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U				
1,1-DICHLOROETHANE		0.28	U					3.9					
1,1-DICHLOROETHENE		0.29	U					3.3					
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	UJ	C				1.5	UJ	C			
1,2-DIBROMOETHANE		0.28	U					0.28	U				
1,2-DICHLOROBENZENE		0.38	U					0.38	U				
1,2-DICHLOROETHANE		0.32	U					0.32	U				
1,2-DICHLOROPROPANE		0.24	U					0.24	U				
1,3-DICHLOROBENZENE		0.25	U					0.25	U				
1,4-DICHLOROBENZENE		0.27	U					0.27	U				
1,4-DIOXANE					58.9	UJ	C				58.9	UJ	C
2-BUTANONE		1.8	UJ	C				1.8	UJ	C			
2-HEXANONE		1.3	UJ	C				1.3	UJ	C			
4-METHYL-2-PENTANONE		1.5	UJ	C				1.5	UJ	C			
ACETONE		3.1	UJ	C				3.1	UJ	C			
BENZENE		0.23	U					0.23	U				
BROMOCHLOROMETHANE		0.32	U					0.32	U				
BROMODICHLOROMETHANE		0.27	U					0.27	U				
BROMOFORM		0.4	U					0.4	U				
BROMOMETHANE		0.39	U					0.39	U				
CARBON DISULFIDE		0.23	U					0.23	U				
CARBON TETRACHLORIDE		0.31	U					0.31	U				
CHLOROBENZENE		0.19	U					0.19	U				
CHLORODIBROMOMETHANE		0.45	U					0.45	U				
CHLOROETHANE		0.33	U					0.33	U				
CHLOROFORM		0.21	U					0.21	U				
CHLOROMETHANE		0.31	U					0.31	U				
CIS-1,2-DICHLOROETHENE		0.32	U					5.2					
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U				
CYCLOHEXANE		0.29	U					0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-70A-062515			MRC-MW-70A-062515-RE			MRC-MW-70B-062515			MRC-MW-70B-062515A		
SDG: 2079226	LAB_ID	2079226004			2079226004			2079226005			2079226005		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U					0.22	U				
1,1,2,2-TETRACHLOROETHANE		0.34	U					0.34	U				
1,1,2-TRICHLOROETHANE		0.33	U					2.1					
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U					0.26	U				
1,1-DICHLOROETHANE		1.2						51					
1,1-DICHLOROETHENE		3.7											
1,2,3-TRICHLOROBENZENE		0.93	U					0.93	U				
1,2,4-TRICHLOROBENZENE		0.82	U					0.82	U				
1,2-DIBROMO-3-CHLOROPROPANE		1.5	UJ	C				1.5	UJ	C			
1,2-DIBROMOETHANE		0.28	U					0.28	U				
1,2-DICHLOROBENZENE		0.38	U					0.38	U				
1,2-DICHLOROETHANE		0.32	U					0.32	U				
1,2-DICHLOROPROPANE		0.24	U					0.24	U				
1,3-DICHLOROBENZENE		0.25	U					0.25	U				
1,4-DICHLOROBENZENE		0.27	U					0.27	U				
1,4-DIOXANE					58.9	UJ	C				189	J	CP
2-BUTANONE		4.5	U	B				1.8	UJ	C			
2-HEXANONE		1.3	UJ	C				1.3	UJ	C			
4-METHYL-2-PENTANONE		1.5	UJ	C				1.5	UJ	C			
ACETONE		3.9	U	B				3.1	UJ	C			
BENZENE		0.23	U					4.6					
BROMOCHLOROMETHANE		0.32	U					0.32	U				
BROMODICHLOROMETHANE		0.27	U					0.27	U				
BROMOFORM		0.4	U					0.4	U				
BROMOMETHANE		0.39	U					0.39	U				
CARBON DISULFIDE		0.23	U					0.23	U				
CARBON TETRACHLORIDE		0.31	U					0.31	U				
CHLOROBENZENE		0.19	U					0.19	U				
CHLORODIBROMOMETHANE		0.45	U					0.45	U				
CHLOROETHANE		0.33	U					0.33	U				
CHLOROFORM		0.21	U					0.21	U				
CHLOROMETHANE		0.31	U					0.31	U				
CIS-1,2-DICHLOROETHENE		13.4						145					
CIS-1,3-DICHLOROPROPENE		0.31	U					0.31	U				
CYCLOHEXANE		0.29	U					0.29	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-70B-062515-DL			TB-062515		
SDG: 2079226	LAB_ID	2079226005			2079226001		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.22	U	
1,1,2,2-TETRACHLOROETHANE					0.34	U	
1,1,2-TRICHLOROETHANE					0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE					0.26	U	
1,1-DICHLOROETHANE					0.28	U	
1,1-DICHLOROETHENE		349			0.29	U	
1,2,3-TRICHLOROBENZENE					0.93	U	
1,2,4-TRICHLOROBENZENE					0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE					1.5	UJ	C
1,2-DIBROMOETHANE					0.28	U	
1,2-DICHLOROBENZENE					0.38	U	
1,2-DICHLOROETHANE					0.32	U	
1,2-DICHLOROPROPANE					0.24	U	
1,3-DICHLOROBENZENE					0.25	U	
1,4-DICHLOROBENZENE					0.27	U	
1,4-DIOXANE					58.9	UJ	C
2-BUTANONE					4	J	CP
2-HEXANONE					1.3	UJ	C
4-METHYL-2-PENTANONE					1.5	UJ	C
ACETONE					3.4	J	CP
BENZENE					0.23	U	
BROMOCHLOROMETHANE					0.32	U	
BROMODICHLOROMETHANE					0.27	U	
BROMOFORM					0.4	U	
BROMOMETHANE					0.39	U	
CARBON DISULFIDE					0.23	U	
CARBON TETRACHLORIDE					0.31	U	
CHLOROBENZENE					0.19	U	
CHLORODIBROMOMETHANE					0.45	U	
CHLOROETHANE					0.33	U	
CHLOROFORM					0.21	U	
CHLOROMETHANE					0.31	U	
CIS-1,2-DICHLOROETHENE					0.32	U	
CIS-1,3-DICHLOROPROPENE					0.31	U	
CYCLOHEXANE					0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-106B/C-062515			MRC-MW-107B/C-062515			MRC-MW-11C-062515			MRC-MW-11C-062515-RE		
SDG: 2079226	LAB_ID	2079226003			2079226010			2079226006			2079226006		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U				
ETHYLBENZENE		0.34	U		0.34	U		0.34	U				
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U				
M+P-XYLENES		0.52	U		0.52	U		0.52	U				
METHYL ACETATE		0.32	UJ	C	0.32	UJ	C	0.32	UJ	C			
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U		0.33	U		0.33	U				
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U				
O-XYLENE		0.33	U		0.33	U		0.33	U				
STYRENE		0.24	U		0.24	U		0.24	U				
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U				
TOLUENE		0.23	U		0.23	U		0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U				
TRICHLOROETHENE		12.8			0.33	U		0.33	U				
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U				
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U				

PROJ_NO: 06247	NSAMPLE	MRC-MW-12C-062515			MRC-MW-12C-062515-RE			MRC-MW-13A-062515			MRC-MW-13A-062515-RE		
SDG: 2079226	LAB_ID	2079226007			2079226007			2079226008			2079226008		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U				
ETHYLBENZENE		0.34	U					0.34	U				
ISOPROPYLBENZENE		0.22	U					0.22	U				
M+P-XYLENES		0.52	U					0.52	U				
METHYL ACETATE		0.32	UJ	C				0.32	UJ	C			
METHYL CYCLOHEXANE		0.3	U					0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U				
METHYLENE CHLORIDE		0.45	U					0.45	U				
O-XYLENE		0.33	U					0.33	U				
STYRENE		0.24	U					0.24	U				
TETRACHLOROETHENE		0.35	U					0.35	U				
TOLUENE		0.23	U					0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U					0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U				
TRICHLOROETHENE		0.33	U					16.8					
TRICHLOROFLUOROMETHANE		0.24	U					0.24	U				
VINYL CHLORIDE		0.3	U					0.31	J	P			

PROJ_NO: 06247	NSAMPLE	MRC-MW-14C-062515			MRC-MW-14C-062515-RE			MRC-MW-63A-062515			MRC-MW-63A-062515-RE		
SDG: 2079226	LAB_ID	2079226002			2079226002			2079226009			2079226009		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U				
ETHYLBENZENE		0.34	U					0.34	U				
ISOPROPYLBENZENE		0.22	U					0.22	U				
M+P-XYLENES		0.52	U					0.52	U				
METHYL ACETATE		0.32	UJ	C				0.32	UJ	C			
METHYL CYCLOHEXANE		0.3	U					0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U				
METHYLENE CHLORIDE		0.45	U					0.45	U				
O-XYLENE		0.33	U					0.33	U				
STYRENE		0.24	U					0.24	U				
TETRACHLOROETHENE		0.35	U					0.35	U				
TOLUENE		0.23	U					0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U					0.26	U				
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U				
TRICHLOROETHENE		0.33	U					5.9					
TRICHLOROFLUOROMETHANE		0.24	U					0.24	U				
VINYL CHLORIDE		0.3	U					1					

PROJ_NO: 06247	NSAMPLE	MRC-MW-70A-062515			MRC-MW-70A-062515-RE			MRC-MW-70B-062515			MRC-MW-70B-062515A		
SDG: 2079226	LAB_ID	2079226004			2079226004			2079226005			2079226005		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U					0.33	U				
ETHYLBENZENE		0.34	U					0.34	U				
ISOPROPYLBENZENE		0.22	U					0.22	U				
M+P-XYLENES		0.52	U					0.52	U				
METHYL ACETATE		0.32	UJ	C				0.32	UJ	C			
METHYL CYCLOHEXANE		0.3	U					0.3	U				
METHYL TERT-BUTYL ETHER		0.33	U					0.33	U				
METHYLENE CHLORIDE		0.6	J	P				0.45	U				
O-XYLENE		0.33	U					0.33	U				
STYRENE		0.24	U					0.24	U				
TETRACHLOROETHENE		0.35	U					2.6					
TOLUENE		0.23	U					0.23	U				
TRANS-1,2-DICHLOROETHENE		0.26	U					2					
TRANS-1,3-DICHLOROPROPENE		0.29	U					0.29	U				
TRICHLOROETHENE		0.33	U										
TRICHLOROFLUOROMETHANE		0.24	U					0.24	U				
VINYL CHLORIDE		3.9						5.2					

PROJ_NO: 06247	NSAMPLE	MRC-MW-70B-062515-DL			TB-062515		
SDG: 2079226	LAB_ID	2079226005			2079226001		
FRACTION: OV	SAMP_DATE	6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE					0.33	U	
ETHYLBENZENE					0.34	U	
ISOPROPYLBENZENE					0.22	U	
M+P-XYLENES					0.52	U	
METHYL ACETATE					0.32	UJ	C
METHYL CYCLOHEXANE					0.3	U	
METHYL TERT-BUTYL ETHER					0.33	U	
METHYLENE CHLORIDE					0.45	U	
O-XYLENE					0.33	U	
STYRENE					0.24	U	
TETRACHLOROETHENE					0.35	U	
TOLUENE					0.23	U	
TRANS-1,2-DICHLOROETHENE					0.26	U	
TRANS-1,3-DICHLOROPROPENE					0.29	U	
TRICHLOROETHENE		1170			0.33	U	
TRICHLOROFLUOROMETHANE					0.24	U	
VINYL CHLORIDE					0.3	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-11C-062515			MRC-MW-12C-062515			MRC-MW-13A-062515			MRC-MW-14C-062515		
SDG: 2079226	LAB_ID	2079226006			2079226007			2079226008			2079226002		
FRACTION: OS	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.034	J	P	0.022	J	P	2.1			0.039	J	P

PROJ_NO: 06247	NSAMPLE	MRC-MW-63A-062515			MRC-MW-70A-062515			MRC-MW-70B-062515-DLRE		
SDG: 2079226	LAB_ID	2079226009			2079226004			2079226005		
FRACTION: OS	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		6.7			2			311		

PROJ_NO: 06247	NSAMPLE	MRC-MW-107B/C-062515			MRC-MW-14C-062515			MRC-MW-63A-062515			MRC-MW-70A-062515		
SDG: 2079226	LAB_ID	2079226010			2079226002			2079226009			2079226004		
FRACTION: M	SAMP_DATE	6/25/2015			6/25/2015			6/25/2015			6/25/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.0017	J	P	0.00074	U		0.00074	U		0.00074	U	
ARSENIC		0.0012	J	NP	0.001	UJ	N	0.001	UJ	N	0.013	J	N
BARIUM		0.052			0.058			0.29			0.15		
BERYLLIUM		0.0003	U		0.0003	U		0.0013			0.0014		
CADMIUM		0.00082	J	NP	0.00037	UJ	N	0.00037	UJ	N	0.00037	UJ	N
CHROMIUM		0.0059	J	N	0.0064	J	N	0.0011	J	NP	0.0084	J	N
COBALT		0.011	J	N	0.0072	J	N	0.26	J	N	0.011	J	N
COPPER		0.0086	J	N	0.0027	J	NP	0.0029	J	NP	0.013	J	N
IRON		2.2			7.5			41.9			89.8		
LEAD		0.015			0.0017	J	P	0.00074	U		0.0029		
MANGANESE		0.75	J	N	0.91	J	N	2	J	N	2	J	N
MERCURY		0.00023	J	P	0.00017	U		0.00017	U		0.00017	U	
MOLYBDENUM		0.001	U	A	0.0011	U	A	0.00074	UJ	N	0.0022	U	A
NICKEL		0.017	J	N	0.013	J	N	0.34	J	N	0.017	J	N
SELENIUM		0.0019	UJ	N	0.0019	UJ	N	0.0019	UJ	N	0.003	J	NP
SILVER		0.00074	UJ	N	0.00074	UJ	N	0.00074	UJ	N	0.00074	UJ	N
THALLIUM		0.0003	U		0.0003	U		0.0003	U		0.0003	U	
VANADIUM		0.0063	J	N	0.0061	J	N	0.00074	UJ	N	0.011	J	N

Appendix B

Results as Reported by the Laboratory

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226001** Date Collected: 6/25/2015 20:45 Matrix: Water

Sample ID: **TB-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	3.4J	J	ug/L	10.0	3.1	SW846 8260C		6/27/15 12:20	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 12:20	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 12:20	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 12:20	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 12:20	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 12:20	JPA	A
2-Butanone	4.0J	J	ug/L	10.0	1.8	SW846 8260C		6/27/15 12:20	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 12:20	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 12:20	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 12:20	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 12:20	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 12:20	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 12:20	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 12:20	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 12:20	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 12:20	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 12:20	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 12:20	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 12:20	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 12:20	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 12:20	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 12:20	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 12:20	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 12:20	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 12:20	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 12:20	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 12:20	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 12:20	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 12:20	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 12:20	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 12:20	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 12:20	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 12:20	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 12:20	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 12:20	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 12:20	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226001** Date Collected: 6/25/2015 20:45 Matrix: Water

Sample ID: **TB-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 12:20	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 12:20	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 12:20	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 12:20	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 12:20	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 12:20	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 12:20	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 12:20	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 12:20	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 12:20	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 12:20	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 12:20	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 12:20	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/27/15 12:20	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 12:20	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 12:20	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.3		%	62 - 133	SW846 8260C			6/27/15 12:20	JPA	A
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260C			6/27/15 12:20	JPA	A
Dibromofluoromethane (S)	90.3		%	78 - 116	SW846 8260C			6/27/15 12:20	JPA	A
Toluene-d8 (S)	100		%	76 - 127	SW846 8260C			6/27/15 12:20	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226002** Date Collected: 6/25/2015 09:36 Matrix: Water

Sample ID: **MRC-MW-14C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 14:27	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 14:27	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 14:27	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 14:27	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 14:27	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 14:27	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 14:27	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 14:27	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:27	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 14:27	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 14:27	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:27	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 14:27	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:27	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:27	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 14:27	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 14:27	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 14:27	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 14:27	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 14:27	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:27	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 14:27	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 14:27	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:27	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 14:27	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 14:27	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 14:27	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:27	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:27	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 14:27	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 14:27	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 14:27	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 14:27	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 14:27	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 14:27	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 14:27	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226002** Date Collected: 6/25/2015 09:36 Matrix: Water

Sample ID: **MRC-MW-14C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 14:27	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 14:27	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 14:27	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 14:27	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 14:27	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 14:27	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 14:27	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 14:27	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 14:27	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 14:27	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 14:27	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 14:27	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 14:27	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/27/15 14:27	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 14:27	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 14:27	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.6		%	62 - 133		SW846 8260C			6/27/15 14:27	JPA	A
4-Bromofluorobenzene (S)	104		%	79 - 114		SW846 8260C			6/27/15 14:27	JPA	A
Dibromofluoromethane (S)	89		%	78 - 116		SW846 8260C			6/27/15 14:27	JPA	A
Toluene-d8 (S)	97.4		%	76 - 127		SW846 8260C			6/27/15 14:27	JPA	A
SEMIVOLATILES											
1,4-Dioxane	0.039J	J	ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 07:17	DHF	F
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.2		%	70 - 130		EPA 522	6/26/15	JEK	6/27/15 07:17	DHF	F
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Barium, Total	0.058		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Chromium, Total	0.0064		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Cobalt, Total	0.0072		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Copper, Total	0.0027J	J	mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Iron, Total	7.5		mg/L	0.067	0.022	SW846 6010C	6/28/15	JPS	6/29/15 11:15	SRT	E2
Lead, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226002** Date Collected: 6/25/2015 09:36 Matrix: Water

Sample ID: **MRC-MW-14C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	0.91		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/29/15	MNP	6/29/15 09:04	MNP	E1
Molybdenum, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Nickel, Total	0.013		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3
Vanadium, Total	0.0061		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:39	ZMC	E3

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226003** Date Collected: 6/25/2015 11:05 Matrix: Water

Sample ID: **MRC-MW-106B/C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 14:48	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 14:48	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 14:48	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 14:48	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 14:48	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 14:48	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 14:48	JPA	A
Carbon Disulfide	0.95J	J	ug/L	1.0	0.23	SW846 8260C		6/27/15 14:48	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:48	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 14:48	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 14:48	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 14:48	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:48	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:48	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 14:48	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 14:48	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 14:48	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 14:48	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 14:48	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
1,1-Dichloroethane	0.33J	J	ug/L	1.0	0.28	SW846 8260C		6/27/15 14:48	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 14:48	JPA	A
1,1-Dichloroethene	2.2		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:48	JPA	A
cis-1,2-Dichloroethene	0.91J	J	ug/L	1.0	0.32	SW846 8260C		6/27/15 14:48	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 14:48	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 14:48	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 14:48	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 14:48	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 14:48	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 14:48	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 14:48	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 14:48	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 14:48	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 14:48	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 14:48	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226003** Date Collected: 6/25/2015 11:05 Matrix: Water

Sample ID: **MRC-MW-106B/C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		6/27/15 14:48	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 14:48	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 14:48	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 14:48	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		6/27/15 14:48	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 14:48	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		6/27/15 14:48	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		6/27/15 14:48	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 14:48	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
Trichloroethene	12.8		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 14:48	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 14:48	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 14:48	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		6/27/15 14:48	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.3		%	62 - 133	SW846 8260C		6/27/15 14:48	JPA	A
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260C		6/27/15 14:48	JPA	A
Dibromofluoromethane (S)	90.1		%	78 - 116	SW846 8260C		6/27/15 14:48	JPA	A
Toluene-d8 (S)	98.4		%	76 - 127	SW846 8260C		6/27/15 14:48	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226004** Date Collected: 6/25/2015 12:25 Matrix: Water

Sample ID: **MRC-MW-70A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	3.9J	J	ug/L	10.0	3.1	SW846 8260C		6/27/15 15:09	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 15:09	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:09	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 15:09	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 15:09	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 15:09	JPA	A
2-Butanone	4.5J	J	ug/L	10.0	1.8	SW846 8260C		6/27/15 15:09	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 15:09	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:09	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 15:09	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 15:09	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 15:09	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 15:09	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:09	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 15:09	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 15:09	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 15:09	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 15:09	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 15:09	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 15:09	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 15:09	JPA	A
1,1-Dichloroethane	1.2		ug/L	1.0	0.28	SW846 8260C		6/27/15 15:09	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:09	JPA	A
1,1-Dichloroethene	3.7		ug/L	1.0	0.29	SW846 8260C		6/27/15 15:09	JPA	A
cis-1,2-Dichloroethene	13.4		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:09	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 15:09	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 15:09	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:09	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 15:09	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 15:09	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 15:09	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 15:09	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 15:09	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 15:09	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 15:09	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 15:09	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226004** Date Collected: 6/25/2015 12:25 Matrix: Water

Sample ID: **MRC-MW-70A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:09	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 15:09	JPA	A
Methylene Chloride	0.60J	J	ug/L	1.0	0.45	SW846 8260C			6/27/15 15:09	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 15:09	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 15:09	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 15:09	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 15:09	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 15:09	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 15:09	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 15:09	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:09	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:09	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 15:09	JPA	A
Vinyl Chloride	3.9		ug/L	1.0	0.30	SW846 8260C			6/27/15 15:09	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:09	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 15:09	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	89.8		%	62 - 133		SW846 8260C			6/27/15 15:09	JPA	A
4-Bromofluorobenzene (S)	106		%	79 - 114		SW846 8260C			6/27/15 15:09	JPA	A
Dibromofluoromethane (S)	92.4		%	78 - 116		SW846 8260C			6/27/15 15:09	JPA	A
Toluene-d8 (S)	102		%	76 - 127		SW846 8260C			6/27/15 15:09	JPA	A
SEMIVOLATILES											
1,4-Dioxane	2.0		ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 07:43	DHF	F
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	24.8	2	%	70 - 130		EPA 522	6/26/15	JEK	6/27/15 07:43	DHF	F
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Arsenic, Total	0.013		mg/L	0.0030	0.0010	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Barium, Total	0.15		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Beryllium, Total	0.0014		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Chromium, Total	0.0084		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Cobalt, Total	0.011		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Copper, Total	0.013		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Iron, Total	89.8		mg/L	0.067	0.022	SW846 6010C	6/28/15	JPS	6/29/15 11:18	SRT	E2
Lead, Total	0.0029		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226004** Date Collected: 6/25/2015 12:25 Matrix: Water

Sample ID: **MRC-MW-70A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Manganese, Total	2.0		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/29/15	MNP	6/29/15 09:06	MNP	E1
Molybdenum, Total	0.0022J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Nickel, Total	0.017		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Selenium, Total	0.0030J	J	mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3
Vanadium, Total	0.011		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:50	ZMC	E3

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226005** Date Collected: 6/25/2015 13:45 Matrix: Water

Sample ID: **MRC-MW-70B-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 15:30	JPA	A
Benzene	4.6		ug/L	1.0	0.23	SW846 8260C		6/27/15 15:30	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:30	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 15:30	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 15:30	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 15:30	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 15:30	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 15:30	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:30	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 15:30	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 15:30	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 15:30	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 15:30	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:30	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 15:30	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 15:30	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 15:30	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 15:30	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 15:30	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 15:30	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 15:30	JPA	A
1,1-Dichloroethane	51.0		ug/L	1.0	0.28	SW846 8260C		6/27/15 15:30	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:30	JPA	A
1,1-Dichloroethene	349		ug/L	20.0	5.8	SW846 8260C		6/29/15 22:18	CJG	B
cis-1,2-Dichloroethene	145		ug/L	1.0	0.32	SW846 8260C		6/27/15 15:30	JPA	A
trans-1,2-Dichloroethene	2.0		ug/L	1.0	0.26	SW846 8260C		6/27/15 15:30	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 15:30	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 15:30	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 15:30	JPA	A
1,4-Dioxane	189J	J	ug/L	320	58.9	SW846 8260C		6/27/15 15:30	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 15:30	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 15:30	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 15:30	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 15:30	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 15:30	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 15:30	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226005** Date Collected: 6/25/2015 13:45 Matrix: Water

Sample ID: **MRC-MW-70B-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:30	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 15:30	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 15:30	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 15:30	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 15:30	JPA	A
Tetrachloroethene	2.6		ug/L	1.0	0.35	SW846 8260C			6/27/15 15:30	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 15:30	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 15:30	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 15:30	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 15:30	JPA	A
1,1,2-Trichloroethane	2.1		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:30	JPA	A
Trichloroethene	1170		ug/L	20.0	6.6	SW846 8260C			6/29/15 22:18	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 15:30	JPA	A
Vinyl Chloride	5.2		ug/L	1.0	0.30	SW846 8260C			6/27/15 15:30	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 15:30	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 15:30	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.2		%	62 - 133		SW846 8260C			6/29/15 22:18	CJG	B
1,2-Dichloroethane-d4 (S)	87.5		%	62 - 133		SW846 8260C			6/27/15 15:30	JPA	A
4-Bromofluorobenzene (S)	104		%	79 - 114		SW846 8260C			6/29/15 22:18	CJG	B
4-Bromofluorobenzene (S)	105		%	79 - 114		SW846 8260C			6/27/15 15:30	JPA	A
Dibromofluoromethane (S)	91		%	78 - 116		SW846 8260C			6/29/15 22:18	CJG	B
Dibromofluoromethane (S)	89.7		%	78 - 116		SW846 8260C			6/27/15 15:30	JPA	A
Toluene-d8 (S)	97.5		%	76 - 127		SW846 8260C			6/27/15 15:30	JPA	A
Toluene-d8 (S)	96.4		%	76 - 127		SW846 8260C			6/29/15 22:18	CJG	B
SEMIVOLATILES											
1,4-Dioxane	311		ug/L	1.8	0.35	EPA 522	6/26/15	JEK	6/29/15 15:55	CGS	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	84.8		%	70 - 130		EPA 522	6/26/15	JEK	6/27/15 08:08	DHF	E
1,4-Dioxane-d8 (S)	93.8		%	70 - 130		EPA 522	6/26/15	JEK	6/29/15 15:55	CGS	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226006** Date Collected: 6/25/2015 15:05 Matrix: Water

Sample ID: **MRC-MW-11C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/29/15 20:54	CJG	B
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/29/15 20:54	CJG	B
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/29/15 20:54	CJG	B
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/29/15 20:54	CJG	B
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/29/15 20:54	CJG	B
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/29/15 20:54	CJG	B
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/29/15 20:54	CJG	B
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/29/15 20:54	CJG	B
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/29/15 20:54	CJG	B
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/29/15 20:54	CJG	B
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/29/15 20:54	CJG	B
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/29/15 20:54	CJG	B
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/29/15 20:54	CJG	B
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/29/15 20:54	CJG	B
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/29/15 20:54	CJG	B
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/29/15 20:54	CJG	B
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/29/15 20:54	CJG	B
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/29/15 20:54	CJG	B
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/29/15 20:54	CJG	B
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/29/15 20:54	CJG	B
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/29/15 20:54	CJG	B
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/29/15 20:54	CJG	B
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/29/15 20:54	CJG	B
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/29/15 20:54	CJG	B
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/29/15 20:54	CJG	B
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/29/15 20:54	CJG	B
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/29/15 20:54	CJG	B
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/29/15 20:54	CJG	B
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/29/15 20:54	CJG	B
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/29/15 20:54	CJG	B
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/29/15 20:54	CJG	B
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/29/15 20:54	CJG	B
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/29/15 20:54	CJG	B
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/29/15 20:54	CJG	B
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/29/15 20:54	CJG	B
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/29/15 20:54	CJG	B

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226006** Date Collected: 6/25/2015 15:05 Matrix: Water

Sample ID: **MRC-MW-11C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/29/15 20:54	CJG	B
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/29/15 20:54	CJG	B
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/29/15 20:54	CJG	B
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/29/15 20:54	CJG	B
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/29/15 20:54	CJG	B
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/29/15 20:54	CJG	B
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/29/15 20:54	CJG	B
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/29/15 20:54	CJG	B
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/29/15 20:54	CJG	B
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/29/15 20:54	CJG	B
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/29/15 20:54	CJG	B
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/29/15 20:54	CJG	B
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/29/15 20:54	CJG	B
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/29/15 20:54	CJG	B
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/29/15 20:54	CJG	B
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/29/15 20:54	CJG	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.8		%	62 - 133		SW846 8260C			6/29/15 20:54	CJG	B
4-Bromofluorobenzene (S)	102		%	79 - 114		SW846 8260C			6/29/15 20:54	CJG	B
Dibromofluoromethane (S)	90.3		%	78 - 116		SW846 8260C			6/29/15 20:54	CJG	B
Toluene-d8 (S)	95.9		%	76 - 127		SW846 8260C			6/29/15 20:54	CJG	B
SEMIVOLATILES											
1,4-Dioxane	0.034J	J	ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 08:33	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.2		%	70 - 130		EPA 522	6/26/15	JEK	6/27/15 08:33	DHF	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226007** Date Collected: 6/25/2015 11:10 Matrix: Water

Sample ID: **MRC-MW-12C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 16:12	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 16:12	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:12	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:12	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 16:12	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 16:12	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 16:12	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 16:12	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:12	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 16:12	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 16:12	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:12	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 16:12	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:12	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:12	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 16:12	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 16:12	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 16:12	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 16:12	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:12	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:12	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 16:12	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:12	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:12	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:12	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:12	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 16:12	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:12	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:12	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 16:12	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 16:12	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:12	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 16:12	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 16:12	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 16:12	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 16:12	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226007** Date Collected: 6/25/2015 11:10 Matrix: Water

Sample ID: **MRC-MW-12C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:12	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 16:12	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 16:12	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:12	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 16:12	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 16:12	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 16:12	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 16:12	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 16:12	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 16:12	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:12	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:12	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:12	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/27/15 16:12	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:12	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 16:12	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.3		%	62 - 133	SW846 8260C			6/27/15 16:12	JPA	A
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260C			6/27/15 16:12	JPA	A
Dibromofluoromethane (S)	91.1		%	78 - 116	SW846 8260C			6/27/15 16:12	JPA	A
Toluene-d8 (S)	97.7		%	76 - 127	SW846 8260C			6/27/15 16:12	JPA	A

SEMIVOLATILES

1,4-Dioxane	0.022J	J	ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 08:58	DHF	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	82.6		%	70 - 130	EPA 522	6/26/15	JEK	6/27/15 08:58	DHF	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226008** Date Collected: 6/25/2015 12:20 Matrix: Water

Sample ID: **MRC-MW-13A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 16:33	JPA	A
Benzene	0.31J	J	ug/L	1.0	0.23	SW846 8260C		6/27/15 16:33	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:33	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:33	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 16:33	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 16:33	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 16:33	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 16:33	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:33	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 16:33	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 16:33	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:33	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 16:33	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:33	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:33	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 16:33	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 16:33	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 16:33	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 16:33	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:33	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:33	JPA	A
1,1-Dichloroethane	0.33J	J	ug/L	1.0	0.28	SW846 8260C		6/27/15 16:33	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:33	JPA	A
1,1-Dichloroethene	2.3		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:33	JPA	A
cis-1,2-Dichloroethene	1.2		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:33	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:33	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 16:33	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:33	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:33	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 16:33	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 16:33	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:33	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 16:33	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 16:33	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 16:33	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 16:33	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226008** Date Collected: 6/25/2015 12:20 Matrix: Water

Sample ID: **MRC-MW-13A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:33	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 16:33	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 16:33	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:33	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 16:33	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 16:33	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 16:33	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 16:33	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 16:33	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 16:33	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:33	JPA	A
Trichloroethene	16.8		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:33	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:33	JPA	A
Vinyl Chloride	0.31J	J	ug/L	1.0	0.30	SW846 8260C			6/27/15 16:33	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:33	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 16:33	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.4		%	62 - 133	SW846 8260C			6/27/15 16:33	JPA	A
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260C			6/27/15 16:33	JPA	A
Dibromofluoromethane (S)	89.7		%	78 - 116	SW846 8260C			6/27/15 16:33	JPA	A
Toluene-d8 (S)	96.2		%	76 - 127	SW846 8260C			6/27/15 16:33	JPA	A

SEMIVOLATILES

1,4-Dioxane	2.1		ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 09:23	DHF	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	79.5		%	70 - 130	EPA 522	6/26/15	JEK	6/27/15 09:23	DHF	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226009** Date Collected: 6/25/2015 13:35 Matrix: Water

Sample ID: **MRC-MW-63A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		6/27/15 16:54	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 16:54	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:54	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:54	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 16:54	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 16:54	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 16:54	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 16:54	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:54	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 16:54	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 16:54	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:54	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 16:54	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:54	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:54	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 16:54	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 16:54	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 16:54	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 16:54	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 16:54	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 16:54	JPA	A
1,1-Dichloroethane	3.9		ug/L	1.0	0.28	SW846 8260C		6/27/15 16:54	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:54	JPA	A
1,1-Dichloroethene	3.3		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:54	JPA	A
cis-1,2-Dichloroethene	5.2		ug/L	1.0	0.32	SW846 8260C		6/27/15 16:54	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:54	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 16:54	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 16:54	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 16:54	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 16:54	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 16:54	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 16:54	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 16:54	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 16:54	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 16:54	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 16:54	JPA	A

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226009** Date Collected: 6/25/2015 13:35 Matrix: Water

Sample ID: **MRC-MW-63A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:54	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 16:54	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 16:54	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:54	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 16:54	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 16:54	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 16:54	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 16:54	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 16:54	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 16:54	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:54	JPA	A
Trichloroethene	5.9		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:54	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 16:54	JPA	A
Vinyl Chloride	1.0		ug/L	1.0	0.30	SW846 8260C			6/27/15 16:54	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 16:54	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 16:54	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.4		%	62 - 133		SW846 8260C			6/27/15 16:54	JPA	A
4-Bromofluorobenzene (S)	103		%	79 - 114		SW846 8260C			6/27/15 16:54	JPA	A
Dibromofluoromethane (S)	89.2		%	78 - 116		SW846 8260C			6/27/15 16:54	JPA	A
Toluene-d8 (S)	96.7		%	76 - 127		SW846 8260C			6/27/15 16:54	JPA	A
SEMIVOLATILES											
1,4-Dioxane	6.7		ug/L	0.070	0.014	EPA 522	6/26/15	JEK	6/27/15 09:48	DHF	E
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81.8		%	70 - 130		EPA 522	6/26/15	JEK	6/27/15 09:48	DHF	E
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Barium, Total	0.29		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Beryllium, Total	0.0013		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Chromium, Total	0.0011J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Cobalt, Total	0.26		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Copper, Total	0.0029J	J	mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Iron, Total	41.9		mg/L	0.067	0.022	SW846 6010C	6/28/15	JPS	6/29/15 11:29	SRT	G2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3

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ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226009** Date Collected: 6/25/2015 13:35 Matrix: Water

Sample ID: **MRC-MW-63A-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Manganese, Total	2.0		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	6/29/15	MNP	6/29/15 09:07	MNP	G1
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Nickel, Total	0.34		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 11:54	ZMC	G3

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226010** Date Collected: 6/25/2015 15:05 Matrix: Water

Sample ID: **MRC-MW-107B/C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	5.1J	J	ug/L	10.0	3.1	SW846 8260C		6/27/15 17:16	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 17:16	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 17:16	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 17:16	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		6/27/15 17:16	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		6/27/15 17:16	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		6/27/15 17:16	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		6/27/15 17:16	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 17:16	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		6/27/15 17:16	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		6/27/15 17:16	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 17:16	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		6/27/15 17:16	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 17:16	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 17:16	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		6/27/15 17:16	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 17:16	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		6/27/15 17:16	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		6/27/15 17:16	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		6/27/15 17:16	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		6/27/15 17:16	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		6/27/15 17:16	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 17:16	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 17:16	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		6/27/15 17:16	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 17:16	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		6/27/15 17:16	JPA	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260C		6/27/15 17:16	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		6/27/15 17:16	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		6/27/15 17:16	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		6/27/15 17:16	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		6/27/15 17:16	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		6/27/15 17:16	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		6/27/15 17:16	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		6/27/15 17:16	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		6/27/15 17:16	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226010** Date Collected: 6/25/2015 15:05 Matrix: Water

Sample ID: **MRC-MW-107B/C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 17:16	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			6/27/15 17:16	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			6/27/15 17:16	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 17:16	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			6/27/15 17:16	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			6/27/15 17:16	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			6/27/15 17:16	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			6/27/15 17:16	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			6/27/15 17:16	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			6/27/15 17:16	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 17:16	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 17:16	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			6/27/15 17:16	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			6/27/15 17:16	JPA	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260C			6/27/15 17:16	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			6/27/15 17:16	JPA	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.5		%	62 - 133		SW846 8260C			6/27/15 17:16	JPA	A
4-Bromofluorobenzene (S)	105		%	79 - 114		SW846 8260C			6/27/15 17:16	JPA	A
Dibromofluoromethane (S)	92.1		%	78 - 116		SW846 8260C			6/27/15 17:16	JPA	A
Toluene-d8 (S)	97.7		%	76 - 127		SW846 8260C			6/27/15 17:16	JPA	A
METALS											
Antimony, Total	0.0017J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Arsenic, Total	0.0012J	J	mg/L	0.0030	0.0010	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Barium, Total	0.052		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Beryllium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Cadmium, Total	0.00082J	J	mg/L	0.0011	0.00037	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Chromium, Total	0.0059		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Cobalt, Total	0.011		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Copper, Total	0.0086		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Iron, Total	2.2		mg/L	0.067	0.022	SW846 6010C	6/28/15	JPS	6/29/15 11:33	SRT	E2
Lead, Total	0.015		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Manganese, Total	0.75		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Mercury, Total	0.00023J	J	mg/L	0.00050	0.00017	SW846 7470A	6/29/15	MNP	6/29/15 09:10	MNP	E1
Molybdenum, Total	0.0010J	J	mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Nickel, Total	0.017		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID: **2079226010** Date Collected: 6/25/2015 15:05 Matrix: Water

Sample ID: **MRC-MW-107B/C-062515** Date Received: 6/25/2015 20:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	*Cntr*
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3
Vanadium, Total	0.0063		mg/L	0.0022	0.00074	SW846 6020A	6/28/15	JPS	6/29/15 12:30	ZMC	E3

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-047

Sample Management

This report contains the results of the analysis of ten (10) water samples collected on June 25, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on June 26, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Ten (10) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Seven (7) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits; except as follows:

- In sample MRC-MW-70A-062515 (2079226004), 1,4-dioxane-d8 was recovered below the control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criteria.

<u>Total Metals by SW-846 Method 6010C</u>

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3a represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

<u>Total Metals by SW-846 Method 6020A</u>

Sample handling. Four (4) water samples were digested by SW-846 Method 3015, and the digestates were analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The samples were digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the ICB and CCBs at 0.0011 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on a sample, 2079226002 in this deliverable group. The spike recoveries and associated RPDs were within method control limits.

<u>Total Mercury in Water by EPA Method 7470A</u>

Sample handling. Four (4) water samples were analyzed for total mercury using EPA method 7470A. The samples were digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was performed on sample 2079226009 in this deliverable group. The RPD and MS/MSD recoveries were within established control limits for this method.

I Jennifer M. Lamoreux, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (717) 944-5541 if there are any questions or problems with the enclosed electronic deliverables.

Signature:  Title: Reporting Manager Date: 7/22/2015

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PROJECT SUMMARY

Workorder: 2079226 TMM047|MRC GW 2015

Sample Comments

Lab ID: 2079226004 **Sample ID:** MRC-MW-70A-062515 **Sample Type:** SAMPLE

The original extract for this sample had low surrogates recovery in the 522 analysis. The original extract was re-analysed and a re-extract of the sample was analysed with similar results, indicating matrix effects. The original extract is reported here.

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2079226 TMM047|MRC GW 2015

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2079226001	TB-062515	Water	6/25/2015 20:45	6/25/2015 20:45	Collected by Client
2079226002	MRC-MW-14C-062515	Water	6/25/2015 09:36	6/25/2015 20:45	Collected by Client
2079226003	MRC-MW-106B/C-062515	Water	6/25/2015 11:05	6/25/2015 20:45	Collected by Client
2079226004	MRC-MW-70A-062515	Water	6/25/2015 12:25	6/25/2015 20:45	Collected by Client
2079226005	MRC-MW-70B-062515	Water	6/25/2015 13:45	6/25/2015 20:45	Collected by Client
2079226006	MRC-MW-11C-062515	Water	6/25/2015 15:05	6/25/2015 20:45	Collected by Client
2079226007	MRC-MW-12C-062515	Water	6/25/2015 11:10	6/25/2015 20:45	Collected by Client
2079226008	MRC-MW-13A-062515	Water	6/25/2015 12:20	6/25/2015 20:45	Collected by Client
2079226009	MRC-MW-63A-062515	Water	6/25/2015 13:35	6/25/2015 20:45	Collected by Client
2079226010	MRC-MW-107B/C-062515	Water	6/25/2015 15:05	6/25/2015 20:45	Collected by Client

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DN

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE __

2079226

Project Name: MRC GW 2015	Project Number: 112IC06247
Project Manager: Tony Apanavage	Report CC:
Company/Address: 20251 Century Blvd, Ste 200, Germantown, MD 20874	
Phone #: 301 528-3002	Email: tony.apanavage@tetratech.com
Sampler's Signature: [signature]	Sampler's Printed Name: Trevor Grandy

ANALYSIS REQUESTED (Include Method Number and Conta...

PRESERVATIVE: 1 | 0 | 2

Preservative Key: 0. NONE 1. HCL 2. HNO_3 3. H_2SO_4 4. NaOH 5. Zn. Acetate 6. MeOH 7. $NaHSO_4$ 8. Other ____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
TB-062515		6/25/15	—	GW	48 ~~3~~ 2	X							
MRC-MW-14C-062515		↓	0939	↓	6	X 6	X 2				X	6	*48-hour TAT*
MRC-MW-106B/C-062515			1105		3	X							
MRC-MW-70A-062515			1225		6	X	X				X	6	*48-hour TAT*
MRC-MW-70B-062515			1345		5	X	X						*48-hour TAT*
MRC-MW-11C-062515			1505		5	X	X						*48-hour TAT*
MRC-MW-12C-062515			1110		5	X	X						*48-hour TAT*
MRC-MW-13A-062515			1220		5	X	X						*48-hour TAT*
MRC-MW-63A-062515			1335		6	X	X				X		*48-hour TAT*
MRC-MW-107B/C-062515		↓	1505	↓	4	X					X		

AG 6/26/15

SPECIAL INSTRUCTIONS/COMMENTS
Metals

48-hour TAT on 1,4 dioxane samples

See QAPP ☐

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day X 2 day ____ 3 day
____ 4 day ____ 5 day

REQUESTED REPORT DATE ____

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
X IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION
PO # 112IC06247
BILL TO:

STATE WHERE SAMPLES WERE COLLECTED: Maryland

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature:
Printed Name: Trevor Grandy	Printed Name: Jerome Williams	Printed Name: Jerome Williams	Printed Name: Jeanette Sassafras	Printed Name: Jeanette Sassafras	Printed Name:
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm:
Date/Time: 6/25/15-1600	Date/Time: 6/25/15 1709	Date/Time: 6/25/15 1709	Date/Time: 6/25 1810	Date/Time: 6/25 2045	Date/Time:

Distribution: White - Lab Copy; Yellow - Return to Originator

2045

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Volatile Organics by 8260C Summary Forms

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-047

Lab File ID: 515061700.D BFB Injection Date: 6/17/2015

Instrument ID: ms05.i BFB Injection Time: 10:58

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.0
75	30.0 - 60.0% of mass 95	45.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.4(0.5) 1
174	50.0 - 100.0% of mass 95	93.2
175	5.0 - 9.0% of mass 174	6.7 (7.2) 1
176	95.0 - 101.0% of mass 174	91.4 (98.1) 1
177	5.0 - 9.0% of mass 176	5.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	515061704.D	6/17/2015	12:20
1234	1234	515061705.D	6/17/2015	12:41
1235	1235	515061706.D	6/17/2015	13:02
1236	1236	515061707.D	6/17/2015	13:23
1237	1237	515061708.D	6/17/2015	13:44
1238	1238	515061709.D	6/17/2015	14:05
1239	1239	515061710.D	6/17/2015	14:27
2193058(LCS)	2193058	515061714.D	6/17/2015	15:51

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-047

Lab File ID: 515062700.D BFB Injection Date: 6/27/2015

Instrument ID: ms05.i BFB Injection Time: 10:06

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.0
75	30.0 - 60.0% of mass 95	44.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.5(0.5) 1
174	50.0 - 100.0% of mass 95	97.0
175	5.0 - 9.0% of mass 174	7.5 (7.8) 1
176	95.0 - 101.0% of mass 174	93.8 (96.8) 1
177	5.0 - 9.0% of mass 176	6.0 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	515062701.D	6/27/2015	10:28
2197921(MB)	2197921	515062703A.D	6/27/2015	11:17
2197922(LCS)	2197922	515062704A.D	6/27/2015	11:38
TB-062515	2079226001	515062706.D	6/27/2015	12:20
MRC-MW-14C-062515	2079226002	515062712.D	6/27/2015	14:27
MRC-MW-106B/C-062515	2079226003	515062713.D	6/27/2015	14:48
MRC-MW-70A-062515	2079226004	515062714.D	6/27/2015	15:09
MRC-MW-70B-062515	2079226005	515062715.D	6/27/2015	15:30
MRC-MW-12C-062515	2079226007	515062717.D	6/27/2015	16:12
MRC-MW-13A-062515	2079226008	515062718.D	6/27/2015	16:33
MRC-MW-63A-062515	2079226009	515062719.D	6/27/2015	16:54
MRC-MW-107B/C-062515	2079226010	515062720.D	6/27/2015	17:16

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-047

Lab File ID: 515062900.D BFB Injection Date: 6/29/2015

Instrument ID: ms05.i BFB Injection Time: 18:45

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.1
75	30.0 - 60.0% of mass 95	47.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	1.2(1.2) 1
174	50.0 - 100.0% of mass 95	95.3
175	5.0 - 9.0% of mass 174	6.8 (7.1) 1
176	95.0 - 101.0% of mass 174	91.1 (95.6) 1
177	5.0 - 9.0% of mass 176	5.9 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	515062901.D	6/29/2015	19:04
2198773(MB)	2198773	515062903A.D	6/29/2015	19:50
2198774(LCS)	2198774	515062904A.D	6/29/2015	20:11
MRC-MW-11C-062515	2079226006	515062906.D	6/29/2015	20:54
MRC-MW-70B-062515-DL20	2079226005	515062910.D	6/29/2015	22:18

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Acetone	5189	23501	92699	207550	385918	L
Acrolein	0.02419	0.02459	0.02781	0.02576	0.02435	A
Acrylonitrile	0.05750	0.05912	0.06437	0.05844	0.05530	A
Acetonitrile	0.01483	0.01403	0.01489	0.01226	0.01242	A
tert-Amyl Ethylether	0.39828	0.42448	0.48868	0.46437	0.46369	A
tert-Amyl methyl ether	0.50136	0.53719	0.62123	0.59195	0.58030	A
tert-Amyl Alcohol	0.00815	0.00852	0.00887	0.00873	0.00861	A
Benzene	0.89493	0.88507	0.95466	0.90300	0.86696	A
Benzyl Chloride	4880	25691	122746	314087	628985	Q
Bromobenzene	0.57356	0.60842	0.67034	0.65302	0.63452	A
Bromochloromethane	0.13057	0.12808	0.14630	0.13583	0.12590	A
Bromodichloromethane	0.29270	0.30082	0.33465	0.31497	0.31170	A
Bromoform *	0.31385	0.33989	0.39101	0.38576	0.37997	A
Bromomethane	5804	31566	150768	338923	776740	Q
2-Butanone	0.02083	0.02053	0.02082	0.01917	0.01846	A
tert.- Butyl Alcohol	0.00932	0.00914	0.01031	0.00902	0.00893	A
tert-Butylbenzene	0.35705	0.39961	0.44817	0.48151	0.47550	A
n-Butylbenzene	12815	72686	319615	899233	1801004	Q
sec-Butylbenzene	1.78130	2.01843	2.26198	2.44091	2.37793	A
Carbon Disulfide	0.64126	0.63809	0.69082	0.65352	0.62186	A
Carbon Tetrachloride	0.29623	0.30237	0.33160	0.34047	0.33527	A
Chloroacetonitrile	749	5271	23498	57491	117591	L
Chlorobenzene *	1.54831	1.56818	1.69826	1.65753	1.60902	A
1-Chlorobutane	0.17146	0.18240	0.19360	0.19025	0.18474	A
Chlorodibromomethane	0.55168	0.57768	0.66464	0.64816	0.64949	A
Chloroethane	0.14296	0.13299	0.15280	0.13614	0.13584	A
2-Chloroethylvinyl ether	7002	39556	187351	461194	899068	L
Chloroform **	51177	168998	631374	1465064	2812287	Q
1-Chlorohexane	0.63141	0.65130	0.73219	0.83483	0.83034	A
Chloromethane *	0.22019	0.20780	0.23607	0.21037	0.20466	A
Chloroprene	0.25359	0.27712	0.31094	0.30506	0.29516	A
3-Chloro-1-propene	0.24557	0.25039	0.26920	0.24502	0.22584	A
o-Chlorotoluene	1.35170	1.52739	1.67547	1.65528	1.61059	A
p-Chlorotoluene	1.26429	1.43883	1.55540	1.55712	1.49940	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Cyclohexane	0.28268	0.28893	0.31738	0.34833	0.34182	A
1,2-Dibromo-3-Chloropropane	0.06448	0.07309	0.07546	0.07492	0.07533	A
1,2-Dibromoethane	0.46027	0.46833	0.53100	0.50793	0.50105	A
Dibromomethane	0.13127	0.13509	0.15172	0.14244	0.13886	A
trans-1,4-Dichloro-2-butene	0.09351	0.10139	0.11463	0.10680	0.10233	A
1,2-Dichlorobenzene	0.95369	0.98524	1.10640	1.07682	1.05790	A
1,3-Dichlorobenzene	1.06523	1.10282	1.20225	1.17627	1.15209	A
1,4-Dichlorobenzene	1.12417	1.10341	1.20630	1.18206	1.15179	A
Dichlorodifluoromethane	0.30923	0.29365	0.31146	0.28566	0.27795	A
1,1-Dichloroethane *	0.37691	0.39276	0.41905	0.39331	0.38047	A
1,2-Dichloroethene, Total	0.28624	0.28558	0.31110	0.29154	0.28256	A
1,2-Dichloroethane	0.25563	0.26465	0.28466	0.26529	0.25699	A
1,1-Dichloroethene **	0.28661	0.28400	0.30638	0.29553	0.28490	A
cis-1,2-Dichloroethene	0.28674	0.28643	0.31276	0.29199	0.28447	A
trans-1,2-Dichloroethene	0.28574	0.28473	0.30945	0.29108	0.28065	A
Dichlorofluoromethane	0.35931	0.38386	0.42648	0.39701	0.38556	A
1,1-Dichloro-2-Propanone	584	4110	21368	53443	107308	L
2,2-Dichloropropane	0.28444	0.28219	0.31716	0.31358	0.30610	A
1,3-Dichloropropane	0.75202	0.75147	0.83507	0.78399	0.77000	A
1,2-Dichloropropane **	0.21573	0.20821	0.23409	0.22302	0.21588	A
1,1-Dichloropropene	0.28877	0.29841	0.32353	0.32261	0.31592	A
cis-1,3-Dichloropropene	0.74378	0.78161	0.89721	0.87040	0.87609	A
trans-1,3-Dichloropropene	0.60071	0.68832	0.78073	0.74785	0.74455	A
1,3-Dichloropropene, Total	0.67225	0.73496	0.83897	0.80913	0.81032	A
Diisobutylene	88537	200755	670782	1940763	3850801	L
Diisopropyl ether	0.53715	0.55781	0.62681	0.59146	0.57391	A
1,4-Dioxane	1303	5054	17330	43348	72318	Q
Ethyl Acetate	0.13684	0.13402	0.15596	0.14270	0.14109	A
Ethyl ether	0.12614	0.12428	0.13898	0.13101	0.12561	A
Ethyl Methacrylate	0.48109	0.54433	0.63767	0.62089	0.61255	A
Ethyl tert-butyl ether	0.52715	0.56113	0.63776	0.59764	0.58096	A
Ethylbenzene **	0.73976	0.78710	0.85629	0.86225	0.85062	A
Freon 113	0.19158	0.18736	0.20610	0.22097	0.21552	A
Heptane	7962	45029	168369	603546	1245892	Q

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
Hexachlorobutadiene	8423	46826	190332	582296	1183754	L
Hexachloroethane	0.33872	0.33922	0.37237	0.39803	0.40484	A
Hexane	0.34953	0.33241	0.36853	0.39928	0.39283	A
2-Hexanone	0.20128	0.21941	0.24919	0.23313	0.22292	A
Iodomethane	1346	7500	60095	258428	610579	Q
Isobutyl alcohol	0.00184	0.00188	0.00153	0.00142	0.00154	A
Isopropyl Alcohol	2043	7871	29538	63392	116415	L
Isopropylbenzene	1.77677	1.95600	2.20129	2.30984	2.21546	A
p-Isopropyltoluene	13494	81683	365094	1001889	1975991	L
Methyl acetate	0.02535	0.03035	0.03325	0.03119	0.02943	A
Methyl acrylate	0.13284	0.14783	0.16736	0.15939	0.15307	A
Methacrylonitrile	0.07680	0.07903	0.08605	0.07826	0.07560	A
Methyl cyclohexane	0.75386	0.75682	0.81697	0.96965	0.98329	A
Methyl methacrylate	0.12717	0.12008	0.14212	0.13619	0.13350	A
Methyl t-Butyl Ether	0.53144	0.54462	0.61294	0.57690	0.55610	A
4-Methyl-2-Pentanone(MIBK)	0.30127	0.32893	0.36481	0.33846	0.32080	A
Methylene Chloride	32521	94191	342285	786578	1517987	Q
Naphthalene	33201	190563	942576	2405789	4706191	L
Nitrobenzene	4292	22428	109967	320245		Q
2-Nitropropane	0.07022	0.07142	0.08438	0.08341	0.08351	A
Octane	7721	34375	119306	463920	965754	Q
Pentachloroethane	0.33539	0.35230	0.37960	0.38430	0.39848	A
Pentane	8544	33657	145799	405666	798949	L
n-Propanol	0.01063	0.01030	0.01089	0.01020	0.00952	A
Propionitrile	0.01970	0.02050	0.02193	0.02015	0.01892	A
n-Propylbenzene	0.48533	0.58390	0.64772	0.67462	0.65907	A
Styrene	1.13024	1.29062	1.47234	1.47818	1.42183	A
1,1,1,2-Tetrachloroethane	0.52521	0.55149	0.61228	0.60802	0.60125	A
1,1,2,2-Tetrachloroethane *	0.46125	0.46384	0.49839	0.47127	0.45159	A
Tetrachloroethene	0.57911	0.58315	0.62432	0.63945	0.62716	A
Tetrahydrofuran	0.04084	0.04128	0.04402	0.03981	0.03729	A
Toluene **	1.21744	1.27858	1.42056	1.39912	1.36872	A
Total Xylenes	0.87748	0.93651	1.04250	1.04741	1.02524	A
1,2,3-Trichlorobenzene	0.48456	0.54589	0.62796	0.64200	0.64568	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	CT
1,2,4-Trichlorobenzene	0.57742	0.60746	0.71083	0.74801	0.75669	A
1,1,1-Trichloroethane	0.32351	0.33233	0.36233	0.35697	0.35118	A
1,1,2-Trichloroethane	0.37703	0.38738	0.41557	0.39196	0.38115	A
Trichloroethene	0.24451	0.24811	0.26364	0.25333	0.24591	A
Trichlorofluoromethane	0.40012	0.38630	0.44318	0.40406	0.40384	A
1,2,3-Trichloropropane	0.14024	0.15021	0.15310	0.14796	0.14051	A
1,2,4-Trimethylbenzene	1.39646	1.65681	1.86275	1.88032	1.83006	A
1,3,5-Trimethylbenzene	1.43581	1.62260	1.82876	1.87600	1.80613	A
Vinyl Acetate	2164	12421	60692	148973	299342	L
Vinyl Chloride **	0.21389	0.20949	0.24660	0.21151	0.21037	A
o-Xylene	0.82841	0.91058	1.02816	1.03941	1.03147	A
mp-Xylene	0.90201	0.94947	1.04968	1.05142	1.02212	A
4-Bromofluorobenzene	0.56864	0.61162	0.69064	0.63333	0.63966	A
Dibromofluoromethane	0.21700	0.23080	0.25856	0.23067	0.23274	A
1,2-Dichloroethane-d4	0.20647	0.22674	0.23860	0.21375	0.21181	A
Toluene-d8	1.80861	1.94973	2.19725	2.00830	2.02186	A

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	774889	2863		L	0.000000	87.493713		0.99907
Acrolein	0.02436	0.02168		A		0.024680		7.47910
Acrylonitrile	0.05559	0.04496		A		0.056470		10.45215
Acetonitrile	0.01237	0.01200		A		0.013260		9.64170
tert-Amyl Ethylether	0.47663	0.37125		A		0.441050		9.95464
tert-Amyl methyl ether	0.59118	0.45151		A		0.553530		10.83738
tert-Amyl Alcohol	0.00906	0.00653		A		0.008350		10.22202
Benzene	0.83748	0.86699		A		0.887010		4.15630
Benzyl Chloride	1346730			Q	0.000000	0.180030	0.003510	0.99996
Bromobenzene	0.65112	0.57370		A		0.623530		6.26318
Bromochloromethane	0.12212	0.11892		A		0.129670		7.07206
Bromodichloromethane	0.31967	0.32621		A		0.314390		4.57314
Bromoform *	0.39517	0.27974		A		0.355060		12.62982
Bromomethane	1895557			Q	0.002560	0.088610	0.007500	0.99979
2-Butanone	0.01896	0.01931		A		0.019720		4.95082
tert.- Butyl Alcohol	0.00915	0.00897		A		0.009490		8.17088
tert-Butylbenzene	0.49070	0.33919		A		0.427390		14.54346
n-Butylbenzene	3742388	6692		Q	-0.012560	0.531860	0.005340	0.99992
sec-Butylbenzene	2.13383	1.78692		A		2.114470		12.59614
Carbon Disulfide	0.61695	0.61637		A		0.639840		4.12992
Carbon Tetrachloride	0.34976	0.30994		A		0.323660		6.37695
Chloroacetonitrile	234728			L	0.000000	120		0.99977
Chlorobenzene *	1.61607	1.52527		A		1.603230		3.81955
1-Chlorobutane	0.18993	0.19330		A		0.186520		4.20298
Chlorodibromomethane	0.68610	0.47924		A		0.608140		12.25243
Chloroethane	0.13501	0.15148		A		0.141030		5.81365
2-Chloroethylvinyl ether	1868277	3239		L	0.000000	7.345610		0.99972
Chloroform **	5720226	34794		Q	0.017340	0.411980	0.000680	0.99986
1-Chlorohexane	0.89686	0.65763		A		0.747790		14.21919
Chloromethane *	0.20733	0.23014		A		0.216650		5.71502
Chloroprene	0.30099	0.27254		A		0.287910		7.20039
3-Chloro-1-propene	0.20908	0.22510		A		0.238600		8.34996
o-Chlorotoluene	1.59161	1.44856		A		1.551510		7.55031
p-Chlorotoluene	1.49124	1.28610		A		1.441770		8.38653
Cyclohexane	0.34909	0.29992		A		0.318310		8.95296
1,2-Dibromo-3-Chloropropane	0.07887	0.08087		A		0.074720		6.98758

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.52200	0.38984		A		0.482920		10.06779
Dibromomethane	0.14410	0.13283		A		0.139470		5.16430
trans-1,4-Dichloro-2-butene	0.10550	0.08981		A		0.101990		8.16460
1,2-Dichlorobenzene	1.08345	1.01386		A		1.039620		5.42755
1,3-Dichlorobenzene	1.18157	1.04482		A		1.132150		5.42889
1,4-Dichlorobenzene	1.17071	1.14056		A		1.154140		3.05036
Dichlorodifluoromethane	0.28081	0.30556		A		0.294900		4.72685
1,1-Dichloroethane *	0.38330	0.36245		A		0.386890		4.55259
1,2-Dichloroethene, Total	0.28814	0.28184		A		0.289570		3.46907
1,2-Dichloroethane	0.26156	0.22823		A		0.259570		6.47798
1,1-Dichloroethene **	0.28829	0.27194		A		0.288230		3.69264
cis-1,2-Dichloroethene	0.29080	0.30881		A		0.294570		3.88055
trans-1,2-Dichloroethene	0.28549	0.25488		A		0.284570		5.66728
Dichlorofluoromethane	0.38621	0.36088		A		0.385620		5.90099
1,1-Dichloro-2-Propanone	231142			L	0.000000	124		0.99739
2,2-Dichloropropane	0.31606	0.29117		A		0.301530		5.05653
1,3-Dichloropropane	0.79415	0.63563		A		0.760330		8.15740
1,2-Dichloropropane **	0.22179	0.19736		A		0.216580		5.38493
1,1-Dichloropropene	0.32506	0.28587		A		0.308600		5.54595
cis-1,3-Dichloropropene	0.91174	0.68814		A		0.824140		10.46293
trans-1,3-Dichloropropene	0.77232	0.59003		A		0.703500		11.31590
1,3-Dichloropropene, Total	0.84203	0.63909		A		0.763820		10.79016
Diisobutylene	7783339	72684		L	0.000000	1.754970		0.99969
Diisopropyl ether	0.57493	0.47859		A		0.562950		8.25658
1,4-Dioxane		524		Q	-0.000020	0.000580	1.783000	0.99959
Ethyl Acetate	0.14313	0.13908		A		0.141830		4.95279
Ethyl ether	0.12860	0.10415		A		0.125540		8.47511
Ethyl Methacrylate	0.63853	0.46539		A		0.571490		13.00959
Ethyl tert-butyl ether	0.58809	0.50414		A		0.570980		7.84840
Ethylbenzene **	0.87285	0.72633		A		0.813600		7.58343
Freon 113	0.22393	0.20173		A		0.206740		6.85765
Heptane	2613268	4401		Q	-0.009450	0.176390	0.002540	0.99936
Hexachlorobutadiene	2439793			L	0.000000	2.737930		0.99896
Hexachloroethane	0.43439	0.33793		A		0.375070		10.28305
Hexane	0.39869	0.37340		A		0.373520		6.87811
2-Hexanone	0.21949	0.17524		A		0.217240		10.85051

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane		545		Q	-0.004180	0.057810	0.010170	0.99794
Isobutyl alcohol	0.00158	0.00200		A		0.001680		12.95556
Isopropyl Alcohol	234301	1126		L	0.000000	289		0.99848
Isopropylbenzene	2.02676	1.80605		A		2.041740		10.21216
p-Isopropyltoluene	4107803	6886		L	0.000000	1.625780		0.99948
Methyl acetate	0.03032	0.02488		A		0.029250		10.48680
Methyl acrylate	0.15733	0.12046		A		0.148330		11.02651
Methacrylonitrile	0.07674	0.06586		A		0.076910		7.75931
Methyl cyclohexane	1.01625	0.83329		A		0.875730		12.71414
Methyl methacrylate	0.13781	0.11087		A		0.129680		8.50609
Methyl t-Butyl Ether	0.56289	0.52030		A		0.557880		5.52911
4-Methyl-2-Pentanone(MIBK)	0.31195	0.25517		A		0.317340		10.76257
Methylene Chloride	3098660	24748		Q	0.011580	0.219890	0.000820	0.99988
Naphthalene	9483114	15919		L	0.000000	0.698310		0.99995
Nitrobenzene		2768		Q	-0.000980	0.014690	0.000280	0.99990
2-Nitropropane	0.08807	0.05771		A		0.076960		14.12999
Octane	2022693	5077		Q	-0.018950	0.318650	0.006880	0.99907
Pentachloroethane	0.42137			A		0.378570		8.19848
Pentane	1575831	5686		L	0.000000	8.611580		0.99977
n-Propanol	0.00965	0.00792		A		0.009870		10.03471
Propionitrile	0.01863	0.01570		A		0.019360		10.06976
n-Propylbenzene	0.67142	0.52547		A		0.606790		12.60050
Styrene	1.41210	1.05873		A		1.323440		12.79824
1,1,1,2-Tetrachloroethane	0.63664	0.52723		A		0.580300		7.73368
1,1,2,2-Tetrachloroethane *	0.46120	0.42972		A		0.462470		4.46980
Tetrachloroethene	0.65704	0.62418		A		0.619200		4.59759
Tetrahydrofuran	0.03683	0.04017		A		0.040030		6.11695
Toluene **	1.40215	1.22182		A		1.329770		6.63444
Total Xylenes	1.02039	0.86727		A		0.973830		8.06091
1,2,3-Trichlorobenzene	0.66853	0.49169		A		0.586620		13.21516
1,2,4-Trichlorobenzene	0.78511	0.59746		A		0.683280		12.67834
1,1,1-Trichloroethane	0.36413	0.32138		A		0.344550		5.33392
1,1,2-Trichloroethane	0.40158	0.37893		A		0.390520		3.56911
Trichloroethene	0.25046	0.22780		A		0.247680		4.37083
Trichlorofluoromethane	0.38962	0.38999		A		0.402450		4.81105
1,2,3-Trichloropropane	0.14363	0.11680		A		0.141780		8.48571

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	1.76261	1.37879		A		1.681120		12.72370
1,3,5-Trimethylbenzene	1.75223	1.43932		A		1.680120		10.93504
Vinyl Acetate	631382	698		L	0.000000	21.848419		0.99928
Vinyl Chloride **	0.21411	0.22337		A		0.218480		6.05444
o-Xylene	1.06226	0.81957		A		0.959980		10.92472
mp-Xylene	0.99945	0.89112		A		0.980750		6.84224
4-Bromofluorobenzene	0.66505	0.65139		A		0.637190		6.14838
Dibromofluoromethane				A		0.233960		6.46544
1,2-Dichloroethane-d4		0.22348		A		0.220140		5.34635
Toluene-d8	2.00157	1.83756		A		1.974980		6.55687

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		168		-32.8	100.0	L
Acrolein	0.0247	0.0171			-30.6	100.0	A
Acrylonitrile	0.0565	0.0402			-28.8	100.0	A
Acetonitrile	0.0133	0.0075			-43.5	100.0	A
tert-Amyl Ethylether	0.4410	0.3859			-12.5	100.0	A
tert-Amyl methyl ether	0.5535	0.4735			-14.5	100.0	A
tert-Amyl Alcohol	0.0083	0.0040			-52.3	100.0	A
Benzene	0.8870	0.7714			-13.0	100.0	A
Benzyl Chloride	50.0000		48.9703		-2.1	100.0	Q
Bromobenzene	0.6235	0.6523			4.6	100.0	A
Bromochloromethane	0.1297	0.1184			-8.7	100.0	A
Bromodichloromethane	0.3144	0.2662			-15.3	100.0	A
Bromoform	0.3551	0.3483		0.100	-1.9	100.0	A
Bromomethane	50.0000		48.1477		-3.7	100.0	Q
2-Butanone	0.0197	0.0127			-35.6	100.0	A
tert.- Butyl Alcohol	0.0095	0.0125			31.3	100.0	A
tert-Butylbenzene	0.4274	0.4797			12.2	100.0	A
n-Butylbenzene	50.0000		49.7214		-0.6	100.0	Q
sec-Butylbenzene	2.1145	2.4052			13.8	100.0	A
Carbon Disulfide	0.6398	0.5764			-9.9	100.0	A
Carbon Tetrachloride	0.3237	0.3082			-4.8	100.0	A
Chloroacetonitrile	250		143		-42.7	100.0	L
Chlorobenzene	1.6032	1.5886		0.300	-0.9	100.0	A
1-Chlorobutane	0.1865	0.1597			-14.4	100.0	A
Chlorodibromomethane	0.6081	0.6011			-1.2	100.0	A
Chloroethane	0.1410	0.1282			-9.1	100.0	A
2-Chloroethylvinyl ether	50.0000		35.9373		-28.1	100.0	L
Chloroform	50.0000		43.4226		-13.2	20.0	Q
1-Chlorohexane	0.7478	0.8393			12.2	100.0	A
Chloromethane	0.2166	0.1917		0.100	-11.5	100.0	A
Chloroprene	0.2879	0.2606			-9.5	100.0	A
3-Chloro-1-propene	0.2386	0.1901			-20.3	100.0	A
o-Chlorotoluene	1.5515	1.6332			5.3	100.0	A
p-Chlorotoluene	1.4418	1.5214			5.5	100.0	A
Cyclohexane	0.3183	0.3104			-2.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.0747	0.0561			-24.9	100.0	A
1,2-Dibromoethane	0.4829	0.4520			-6.4	100.0	A
Dibromomethane	0.1395	0.1164			-16.5	100.0	A
trans-1,4-Dichloro-2-butene	0.1020	0.0796			-21.9	100.0	A
1,2-Dichlorobenzene	1.0396	1.0477			0.8	100.0	A
1,3-Dichlorobenzene	1.1322	1.1686			3.2	100.0	A
1,4-Dichlorobenzene	1.1541	1.1664			1.1	100.0	A
Dichlorodifluoromethane	0.2949	0.2845			-3.5	100.0	A
1,1-Dichloroethane	0.3869	0.3287		0.100	-15.1	100.0	A
1,2-Dichloroethene, Total	0.2896	0.2465			-14.9	100.0	A
1,2-Dichloroethane	0.2596	0.2180			-16.0	100.0	A
1,1-Dichloroethene	0.2882	0.2540			-11.9	20.0	A
cis-1,2-Dichloroethene	0.2946	0.2473			-16.0	100.0	A
trans-1,2-Dichloroethene	0.2846	0.2458			-13.6	100.0	A
Dichlorofluoromethane	0.3856	0.3687			-4.4	100.0	A
1,1-Dichloro-2-Propanone	250		141		-43.4	100.0	L
2,2-Dichloropropane	0.3015	0.2842			-5.7	100.0	A
1,3-Dichloropropane	0.7603	0.6964			-8.4	100.0	A
1,2-Dichloropropane	0.2166	0.1837			-15.2	20.0	A
1,1-Dichloropropene	0.3086	0.2801			-9.2	100.0	A
cis-1,3-Dichloropropene	0.8241	0.8127			-1.4	100.0	A
trans-1,3-Dichloropropene	0.7035	0.6802			-3.3	100.0	A
1,3-Dichloropropene, Total	0.7638	0.7465			-2.3	100.0	A
Diisobutylene	50.0000		42.7841		-14.4	100.0	L
Diisopropyl ether	0.5630	0.4757			-15.5	100.0	A
1,4-Dioxane	1250		245		-80.4	100.0	Q
Ethyl Acetate	0.1418	0.0967			-31.8	100.0	A
Ethyl ether	0.1255	0.1053			-16.1	100.0	A
Ethyl Methacrylate	0.5715	0.5159			-9.7	100.0	A
Ethyl tert-butyl ether	0.5710	0.4851			-15.0	100.0	A
Ethylbenzene	0.8136	0.8384			3.0	20.0	A
Freon 113	0.2067	0.2001			-3.2	100.0	A
Heptane	50.0000		44.8541		-10.3	100.0	Q
Hexachlorobutadiene	50.0000		44.6068		-10.8	100.0	L
Hexachloroethane	0.3751	0.3902			4.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3735	0.3390			-9.2	100.0	A
2-Hexanone	0.2172	0.1640			-24.5	100.0	A
Iodomethane	50.0000		46.0850		-7.8	100.0	Q
Isobutyl alcohol	0.0017	0.0007			-58.6	100.0	A
Isopropyl Alcohol	250		82.4922		-67.0	100.0	L
Isopropylbenzene	2.0417	2.2977			12.5	100.0	A
p-Isopropyltoluene	50.0000		47.7215		-4.6	100.0	L
Methyl acetate	0.0292	0.0215			-26.4	100.0	A
Methyl acrylate	0.1483	0.1104			-25.6	100.0	A
Methacrylonitrile	0.0769	0.0577			-25.0	100.0	A
Methyl cyclohexane	0.8757	0.9542			9.0	100.0	A
Methyl methacrylate	0.1297	0.0955			-26.4	100.0	A
Methyl t-Butyl Ether	0.5579	0.4503			-19.3	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.3173	0.2490			-21.5	100.0	A
Methylene Chloride	50.0000		46.3829		-7.2	100.0	Q
Naphthalene	50.0000		38.4865		-23.0	100.0	L
Nitrobenzene	500		300		-40.1	100.0	Q
2-Nitropropane	0.0770	0.0635			-17.6	100.0	A
Octane	50.0000		48.5159		-3.0	100.0	Q
Pentachloroethane	0.3786	0.3878			2.4	100.0	A
Pentane	50.0000		47.6533		-4.7	100.0	L
n-Propanol	0.0099	0.0079			-19.6	100.0	A
Propionitrile	0.0194	0.0126			-35.1	100.0	A
n-Propylbenzene	0.6068	0.6794			12.0	100.0	A
Styrene	1.3234	1.4442			9.1	100.0	A
1,1,1,2-Tetrachloroethane	0.5803	0.5857			0.9	100.0	A
1,1,2,2-Tetrachloroethane	0.4625	0.3975		0.300	-14.1	100.0	A
Tetrachloroethene	0.6192	0.6387			3.1	100.0	A
Tetrahydrofuran	0.0400	0.0255			-36.4	100.0	A
Toluene	1.3298	1.3458			1.2	20.0	A
Total Xylenes	0.9738	1.0136			4.1	100.0	A
1,2,3-Trichlorobenzene	0.5866	0.5263			-10.3	100.0	A
1,2,4-Trichlorobenzene	0.6833	0.6665			-2.5	100.0	A
1,1,1-Trichloroethane	0.3446	0.3106			-9.8	100.0	A
1,1,2-Trichloroethane	0.3905	0.3542			-9.3	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/27/2015 10:28

Lab File ID: 515062701.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2477	0.2210			-10.8	100.0	A
Trichlorofluoromethane	0.4024	0.3855			-4.2	100.0	A
1,2,3-Trichloropropane	0.1418	0.1261			-11.0	100.0	A
1,2,4-Trimethylbenzene	1.6811	1.8606			10.7	100.0	A
1,3,5-Trimethylbenzene	1.6801	1.8442			9.8	100.0	A
Vinyl Acetate	50.0000		37.5234		-25.0	100.0	L
Vinyl Chloride	0.2185	0.2266			3.7	20.0	A
o-Xylene	0.9600	0.9997			4.1	100.0	A
mp-Xylene	0.9808	1.0205			4.1	100.0	A
4-Bromofluorobenzene	0.6372	0.6759			6.1	100.0	A
Dibromofluoromethane	0.2340	0.2036			-13.0	100.0	A
1,2-Dichloroethane-d4	0.2201	0.1814			-17.6	100.0	A
Toluene-d8	1.9750	1.9642			-0.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/29/2015 19:04

Lab File ID: 515062901.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		192		-23.4	100.0	L
Acrolein	0.0247	0.0164			-33.7	100.0	A
Acrylonitrile	0.0565	0.0417			-26.1	100.0	A
Acetonitrile	0.0133	0.0094			-29.2	100.0	A
tert-Amyl Ethylether	0.4410	0.3880			-12.0	100.0	A
tert-Amyl methyl ether	0.5535	0.4758			-14.0	100.0	A
tert-Amyl Alcohol	0.0083	0.0060			-28.5	100.0	A
Benzene	0.8870	0.7785			-12.2	100.0	A
Benzyl Chloride	50.0000		47.3826		-5.2	100.0	Q
Bromobenzene	0.6235	0.6554			5.1	100.0	A
Bromochloromethane	0.1297	0.1208			-6.8	100.0	A
Bromodichloromethane	0.3144	0.2763			-12.1	100.0	A
Bromoform	0.3551	0.3493		0.100	-1.6	100.0	A
Bromomethane	50.0000		37.8436		-24.3	100.0	Q
2-Butanone	0.0197	0.0135			-31.8	100.0	A
tert.- Butyl Alcohol	0.0095	0.0058			-38.9	100.0	A
tert-Butylbenzene	0.4274	0.4673			9.3	100.0	A
n-Butylbenzene	50.0000		48.4695		-3.1	100.0	Q
sec-Butylbenzene	2.1145	2.3280			10.1	100.0	A
Carbon Disulfide	0.6398	0.5543			-13.4	100.0	A
Carbon Tetrachloride	0.3237	0.3135			-3.1	100.0	A
Chloroacetonitrile	250		187		-25.4	100.0	L
Chlorobenzene	1.6032	1.5927		0.300	-0.7	100.0	A
1-Chlorobutane	0.1865	0.1588			-14.9	100.0	A
Chlorodibromomethane	0.6081	0.6002			-1.3	100.0	A
Chloroethane	0.1410	0.1287			-8.7	100.0	A
2-Chloroethylvinyl ether	50.0000		35.8181		-28.4	100.0	L
Chloroform	50.0000		44.9758		-10.0	20.0	Q
1-Chlorohexane	0.7478	0.7985			6.8	100.0	A
Chloromethane	0.2166	0.1720		0.100	-20.6	100.0	A
Chloroprene	0.2879	0.2639			-8.4	100.0	A
3-Chloro-1-propene	0.2386	0.1945			-18.5	100.0	A
o-Chlorotoluene	1.5515	1.6054			3.5	100.0	A
p-Chlorotoluene	1.4418	1.4995			4.0	100.0	A
Cyclohexane	0.3183	0.2993			-6.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/29/2015 19:04

Lab File ID: 515062901.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	0.0747	0.0587			-21.5	100.0	A
1,2-Dibromoethane	0.4829	0.4475			-7.3	100.0	A
Dibromomethane	0.1395	0.1199			-14.0	100.0	A
trans-1,4-Dichloro-2-butene	0.1020	0.0819			-19.7	100.0	A
1,2-Dichlorobenzene	1.0396	1.0440			0.4	100.0	A
1,3-Dichlorobenzene	1.1322	1.1617			2.6	100.0	A
1,4-Dichlorobenzene	1.1541	1.1707			1.4	100.0	A
Dichlorodifluoromethane	0.2949	0.2543			-13.8	100.0	A
1,1-Dichloroethane	0.3869	0.3341		0.100	-13.6	100.0	A
1,2-Dichloroethene, Total	0.2896	0.2470			-14.7	100.0	A
1,2-Dichloroethane	0.2596	0.2272			-12.5	100.0	A
1,1-Dichloroethene	0.2882	0.2435			-15.5	20.0	A
cis-1,2-Dichloroethene	0.2946	0.2486			-15.6	100.0	A
trans-1,2-Dichloroethene	0.2846	0.2455			-13.7	100.0	A
Dichlorofluoromethane	0.3856	0.3655			-5.2	100.0	A
1,1-Dichloro-2-Propanone	250		161		-35.6	100.0	L
2,2-Dichloropropane	0.3015	0.2857			-5.3	100.0	A
1,3-Dichloropropane	0.7603	0.6918			-9.0	100.0	A
1,2-Dichloropropane	0.2166	0.1861			-14.1	20.0	A
1,1-Dichloropropene	0.3086	0.2797			-9.3	100.0	A
cis-1,3-Dichloropropene	0.8241	0.7915			-4.0	100.0	A
trans-1,3-Dichloropropene	0.7035	0.6763			-3.9	100.0	A
1,3-Dichloropropene, Total	0.7638	0.7339			-3.9	100.0	A
Diisobutylene	50.0000		40.6805		-18.6	100.0	L
Diisopropyl ether	0.5630	0.4721			-16.1	100.0	A
1,4-Dioxane	1250		704		-43.7	100.0	Q
Ethyl Acetate	0.1418	0.0990			-30.2	100.0	A
Ethyl ether	0.1255	0.1035			-17.6	100.0	A
Ethyl Methacrylate	0.5715	0.5086			-11.0	100.0	A
Ethyl tert-butyl ether	0.5710	0.4873			-14.7	100.0	A
Ethylbenzene	0.8136	0.8321			2.3	20.0	A
Freon 113	0.2067	0.1907			-7.8	100.0	A
Heptane	50.0000		42.1090		-15.8	100.0	Q
Hexachlorobutadiene	50.0000		43.4820		-13.0	100.0	L
Hexachloroethane	0.3751	0.3841			2.4	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/29/2015 19:04

Lab File ID: 515062901.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	0.3735	0.3147			-15.8	100.0	A
2-Hexanone	0.2172	0.1673			-23.0	100.0	A
Iodomethane	50.0000		38.5017		-23.0	100.0	Q
Isobutyl alcohol	0.0017	0.0013			-21.2	100.0	A
Isopropyl Alcohol	250		168		-32.8	100.0	L
Isopropylbenzene	2.0417	2.2392			9.7	100.0	A
p-Isopropyltoluene	50.0000		47.1185		-5.8	100.0	L
Methyl acetate	0.0292	0.0224			-23.4	100.0	A
Methyl acrylate	0.1483	0.1100			-25.8	100.0	A
Methacrylonitrile	0.0769	0.0589			-23.4	100.0	A
Methyl cyclohexane	0.8757	0.8879			1.4	100.0	A
Methyl methacrylate	0.1297	0.0975			-24.9	100.0	A
Methyl t-Butyl Ether	0.5579	0.4543			-18.6	100.0	A
4-Methyl-2-Pentanone(MIBK)	0.3173	0.2501			-21.2	100.0	A
Methylene Chloride	50.0000		47.6441		-4.7	100.0	Q
Naphthalene	50.0000		38.2912		-23.4	100.0	L
Nitrobenzene	500		303		-39.3	100.0	Q
2-Nitropropane	0.0770	0.0659			-14.3	100.0	A
Octane	50.0000		45.9991		-8.0	100.0	Q
Pentachloroethane	0.3786	0.3787			0.0	100.0	A
Pentane	50.0000		41.3397		-17.3	100.0	L
n-Propanol	0.0099	0.0082			-17.1	100.0	A
Propionitrile	0.0194	0.0145			-25.2	100.0	A
n-Propylbenzene	0.6068	0.6650			9.6	100.0	A
Styrene	1.3234	1.4299			8.0	100.0	A
1,1,1,2-Tetrachloroethane	0.5803	0.5946			2.5	100.0	A
1,1,2,2-Tetrachloroethane	0.4625	0.3938		0.300	-14.8	100.0	A
Tetrachloroethene	0.6192	0.6432			3.9	100.0	A
Tetrahydrofuran	0.0400	0.0256			-36.0	100.0	A
Toluene	1.3298	1.3193			-0.8	20.0	A
Total Xylenes	0.9738	1.0043			3.1	100.0	A
1,2,3-Trichlorobenzene	0.5866	0.5241			-10.7	100.0	A
1,2,4-Trichlorobenzene	0.6833	0.6580			-3.7	100.0	A
1,1,1-Trichloroethane	0.3446	0.3204			-7.0	100.0	A
1,1,2-Trichloroethane	0.3905	0.3553			-9.0	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date/Time: 6/29/2015 19:04

Lab File ID: 515062901.D Init. Calib. Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 11:59 14:27

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	0.2477	0.2246			-9.3	100.0	A
Trichlorofluoromethane	0.4024	0.3939			-2.1	100.0	A
1,2,3-Trichloropropane	0.1418	0.1259			-11.2	100.0	A
1,2,4-Trimethylbenzene	1.6811	1.8349			9.2	100.0	A
1,3,5-Trimethylbenzene	1.6801	1.8153			8.0	100.0	A
Vinyl Acetate	50.0000		38.9001		-22.2	100.0	L
Vinyl Chloride	0.2185	0.2200			0.7	20.0	A
o-Xylene	0.9600	0.9834			2.4	100.0	A
mp-Xylene	0.9808	1.0148			3.5	100.0	A
4-Bromofluorobenzene	0.6372	0.6864			7.7	100.0	A
Dibromofluoromethane	0.2340	0.2096			-10.4	100.0	A
1,2-Dichloroethane-d4	0.2201	0.1858			-15.6	100.0	A
Toluene-d8	1.9750	1.9399			-1.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2197921

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-047

Lab File ID: 515062703A.D Lab Sample ID: 2197921

Date Analyzed: 6/27/2015 Time Analyzed: 11:17

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms05.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2197922(LCS)	2197922	515062704A.D	11:38
TB-062515	2079226001	515062706.D	12:20
MRC-MW-14C-062515	2079226002	515062712.D	14:27
MRC-MW-106B/C-062515	2079226003	515062713.D	14:48
MRC-MW-70A-062515	2079226004	515062714.D	15:09
MRC-MW-70B-062515	2079226005	515062715.D	15:30
MRC-MW-12C-062515	2079226007	515062717.D	16:12
MRC-MW-13A-062515	2079226008	515062718.D	16:33
MRC-MW-63A-062515	2079226009	515062719.D	16:54
MRC-MW-107B/C-062515	2079226010	515062720.D	17:16

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2197921(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Matrix (soil/water): WATER Lab Sample ID: 2197921

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 515062703A.D

Level (low/med): Date Received: 6/27/15

% Moisture: not dec. 100.0 Date Analyzed: 6/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2197921(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Matrix (soil/water): WATER Lab Sample ID: 2197921

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 515062703A.D

Level (low/med): Date Received: 6/27/15

% Moisture: not dec. 100.0 Date Analyzed: 6/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2198773

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-047

Lab File ID: 515062903A.D Lab Sample ID: 2198773

Date Analyzed: 6/29/2015 Time Analyzed: 19:50

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms05.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2198774(LCS)	2198774	515062904A.D	20:11
MRC-MW-11C-062515	2079226006	515062906.D	20:54
MRC-MW-70B-062515-DL2	2079226005	515062910.D	22:18

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2198773(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Matrix (soil/water): WATER Lab Sample ID: 2198773

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 515062903A.D

Level (low/med): Date Received: 6/29/15

% Moisture: not dec. 100.0 Date Analyzed: 6/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2198773(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Matrix (soil/water): WATER Lab Sample ID: 2198773

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 515062903A.D

Level (low/med): Date Received: 6/29/15

% Moisture: not dec. 100.0 Date Analyzed: 6/29/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-047

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
01	2193058(LCS)	93.6	91.6	90.1	95.9	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-047

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2197921(MB)	107	88.5	88.3	98.9	0
03	2197922(LCS)	110	89.7	86.2	102	0
04	TB-062515	108	90.3	88.3	100	0
05	MRC-MW-14C-062515	104	89.0	88.6	97.4	0
06	MRC-MW-106B/C-062515	105	90.1	88.3	98.4	0
07	MRC-MW-70A-062515	106	92.4	89.8	102	0
08	MRC-MW-70B-062515	105	89.7	87.5	97.5	0
09	MRC-MW-12C-062515	107	91.1	90.3	97.7	0
10	MRC-MW-13A-062515	103	89.7	88.4	96.2	0
11	MRC-MW-63A-062515	103	89.2	88.4	96.7	0
12	MRC-MW-107B/C-062515	105	92.1	90.5	97.7	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-047

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
13	2198773(MB)	105	88.0	89.6	95.8	0
14	2198774(LCS)	104	88.1	86.3	96.4	0
15	MRC-MW-11C-062515	102	90.3	90.8	95.9	0
16	MRC-MW-70B-062515-DL20	104	91.0	91.2	96.4	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2193058

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,1,2-Trichloroethane	20.0		21.2	106	(82-126)
Trichloroethene	20.0		21.8	109	(77-124)
Trichlorofluoromethane	20.0		19.1	95.4	(38-123)
Vinyl Chloride	20.0		19.4	96.9	(27-138)
o-Xylene	20.0		22.4	112	(79-124)
mp-Xylene	40.0		46.0	115	(79-125)
Acetone	100		111	111	(40-151)
Benzene	20.0		21.6	108	(80-124)
Bromochloromethane	20.0		22.0	110	(73-117)
Bromodichloromethane	20.0		20.8	104	(79-126)
Bromoform	20.0		21.8	109	(70-123)
Bromomethane	20.0		24.0	120	(45-148)
2-Butanone	100		99.3	99.3	(50-152)
Carbon Disulfide	20.0		21.6	108	(57-131)
Carbon Tetrachloride	20.0		22.6	113	(62-132)
Chlorobenzene	20.0		21.9	109	(85-117)
Chlorodibromomethane	20.0		22.2	111	(77-122)
Chloroethane	20.0		19.3	96.3	(51-142)
Chloroform	20.0		21.2	106	(78-122)
Chloromethane	20.0		20.2	101	(38-156)
Cyclohexane	20.0		24.2	121	(66-130)
1,2-Dibromo-3-Chloropro	20.0		20.3	102	(59-133)
1,2-Dibromoethane	20.0		22.2	111	(80-124)
1,2-Dichlorobenzene	20.0		21.4	107	(82-118)
1,3-Dichlorobenzene	20.0		21.7	108	(81-118)
1,4-Dichlorobenzene	20.0		21.3	106	(81-116)
Dichlorodifluoromethane	20.0		17.6	87.8	(17-166)
1,1-Dichloroethane	20.0		21.1	106	(78-124)
1,2-Dichloroethane	20.0		20.9	105	(70-133)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2193058

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,1-Dichloroethene	20.0		22.0	110	(63-128)
cis-1,2-Dichloroethene	20.0		21.0	105	(78-125)
trans-1,2-Dichloroethen	20.0		22.5	112	(71-122)
1,2-Dichloropropane	20.0		21.7	108	(81-127)
cis-1,3-Dichloropropene	20.0		21.8	109	(81-121)
trans-1,3-Dichloroprope	20.0		22.7	113	(78-126)
1,4-Dioxane	500		338	67.5	(1-280)
Ethylbenzene	20.0		22.8	114	(80-124)
Freon 113	20.0		23.7	119	(50-130)
2-Hexanone	100		110	110	(65-154)
Isopropylbenzene	20.0		23.8	119	(73-129)
Methyl acetate	20.0		22.2	111	(70-130)
Methyl cyclohexane	20.0		25.0	125	(70-130)
Methyl t-Butyl Ether	20.0		21.1	105	(69-115)
4-Methyl-2-Pentanone(MI	100		112	112	(71-146)
Methylene Chloride	20.0		21.6	108	(76-121)
Styrene	20.0		22.9	115	(79-123)
1,1,2,2-Tetrachloroetha	20.0		21.0	105	(74-135)
Tetrachloroethene	20.0		22.4	112	(72-124)
Toluene	20.0		22.5	113	(80-125)
1,2,3-Trichlorobenzene	20.0		21.8	109	(61-126)
1,2,4-Trichlorobenzene	20.0		21.9	109	(67-123)
1,1,1-Trichloroethane	20.0		22.0	110	(66-130)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2197922

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,1,2,2-Tetrachloroetha	20.0		20.4	102	(74-135)
Tetrachloroethene	20.0		22.7	113	(72-124)
Toluene	20.0		21.6	108	(80-125)
1,2,3-Trichlorobenzene	20.0		19.9	99.4	(61-126)
1,2,4-Trichlorobenzene	20.0		20.6	103	(67-123)
1,1,1-Trichloroethane	20.0		19.5	97.3	(66-130)
1,1,2-Trichloroethane	20.0		20.4	102	(82-126)
Trichloroethene	20.0		19.3	96.5	(77-124)
Trichlorofluoromethane	20.0		18.7	93.7	(38-123)
Vinyl Chloride	20.0		18.9	94.6	(27-138)
o-Xylene	20.0		21.8	109	(79-124)
mp-Xylene	40.0		45.0	112	(79-125)
Acetone	100		91.3	91.3	(40-151)
Benzene	20.0		18.6	92.9	(80-124)
Bromochloromethane	20.0		19.6	98.2	(73-117)
Bromodichloromethane	20.0		17.9	89.5	(79-126)
Bromoform	20.0		22.1	111	(70-123)
Bromomethane	20.0		19.8	99	(45-148)
2-Butanone	100		84.3	84.3	(50-152)
Carbon Disulfide	20.0		18.9	94.6	(57-131)
Carbon Tetrachloride	20.0		20.7	104	(62-132)
Chlorobenzene	20.0		21.4	107	(85-117)
Chlorodibromomethane	20.0		21.6	108	(77-122)
Chloroethane	20.0		17.7	88.4	(51-142)
Chloroform	20.0		18.1	90.4	(78-122)
Chloromethane	20.0		15.4	77.1	(38-156)
Cyclohexane	20.0		21.4	107	(66-130)
1,2-Dibromo-3-Chloropro	20.0		18.6	92.8	(59-133)
1,2-Dibromoethane	20.0		21.2	106	(80-124)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2197922

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,2-Dichlorobenzene	20.0		21.3	106	(82-118)
1,3-Dichlorobenzene	20.0		21.6	108	(81-118)
1,4-Dichlorobenzene	20.0		21.6	108	(81-116)
Dichlorodifluoromethane	20.0		15.5	77.7	(17-166)
1,1-Dichloroethane	20.0		17.8	89	(78-124)
1,2-Dichloroethane	20.0		18.2	90.8	(70-133)
1,1-Dichloroethene	20.0		19.0	95.2	(63-128)
cis-1,2-Dichloroethene	20.0		17.8	88.9	(78-125)
trans-1,2-Dichloroethen	20.0		19.0	95.1	(71-122)
1,2-Dichloropropane	20.0		18.2	90.9	(81-127)
cis-1,3-Dichloropropene	20.0		20.5	103	(81-121)
trans-1,3-Dichloroprope	20.0		21.7	108	(78-126)
1,4-Dioxane	500		165	33	(1-280)
Ethylbenzene	20.0		21.9	110	(80-124)
Freon 113	20.0		21.6	108	(50-130)
2-Hexanone	100		98.5	98.5	(65-154)
Isopropylbenzene	20.0		23.6	118	(73-129)
Methyl acetate	20.0		19.3	96.3	(70-130)
Methyl cyclohexane	20.0		23.8	119	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91	(69-115)
4-Methyl-2-Pentanone(MI	100		101	101	(71-146)
Methylene Chloride	20.0		19.6	97.9	(76-121)
Styrene	20.0		22.7	114	(79-123)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2198774

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		106	106	(40-151)
Benzene	20.0		19.4	96.8	(80-124)
Bromochloromethane	20.0		20.2	101	(73-117)
Bromodichloromethane	20.0		19.2	96	(79-126)
Bromoform	20.0		21.7	108	(70-123)
Bromomethane	20.0		15.2	76.1	(45-148)
2-Butanone	100		105	105	(50-152)
Carbon Disulfide	20.0		19.4	97.1	(57-131)
Carbon Tetrachloride	20.0		22.3	112	(62-132)
Chlorobenzene	20.0		21.8	109	(85-117)
Chlorodibromomethane	20.0		21.7	108	(77-122)
Chloroethane	20.0		17.0	84.9	(51-142)
Chloroform	20.0		19.2	96.1	(78-122)
Chloromethane	20.0		15.3	76.7	(38-156)
Cyclohexane	20.0		21.9	109	(66-130)
1,2-Dibromo-3-Chloropro	20.0		19.9	99.3	(59-133)
1,2-Dibromoethane	20.0		21.2	106	(80-124)
1,2-Dichlorobenzene	20.0		21.8	109	(82-118)
1,3-Dichlorobenzene	20.0		22.0	110	(81-118)
1,4-Dichlorobenzene	20.0		21.8	109	(81-116)
Dichlorodifluoromethane	20.0		14.6	73.1	(17-166)
1,1-Dichloroethane	20.0		18.7	93.5	(78-124)
1,2-Dichloroethane	20.0		19.7	98.4	(70-133)
1,1-Dichloroethene	20.0		19.6	98.2	(63-128)
cis-1,2-Dichloroethene	20.0		18.6	92.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.0	99.8	(71-122)
1,2-Dichloropropane	20.0		19.1	95.6	(81-127)
cis-1,3-Dichloropropene	20.0		20.3	102	(81-121)
trans-1,3-Dichloroprope	20.0		21.7	108	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Laboratory Control Spike - Sample No: 2198774

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		446	89.2	(1-280)
Ethylbenzene	20.0		22.4	112	(80-124)
Freon 113	20.0		21.8	109	(50-130)
2-Hexanone	100		97.4	97.4	(65-154)
Isopropylbenzene	20.0		23.5	117	(73-129)
Methyl acetate	20.0		20.3	101	(70-130)
Methyl cyclohexane	20.0		23.5	117	(70-130)
Methyl t-Butyl Ether	20.0		18.6	92.9	(69-115)
4-Methyl-2-Pentanone(MI	100		98.9	98.9	(71-146)
Methylene Chloride	20.0		20.5	102	(76-121)
Styrene	20.0		22.6	113	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.8	99.2	(74-135)
Tetrachloroethene	20.0		23.0	115	(72-124)
Toluene	20.0		21.7	109	(80-125)
1,2,3-Trichlorobenzene	20.0		19.9	99.5	(61-126)
1,2,4-Trichlorobenzene	20.0		20.5	102	(67-123)
1,1,1-Trichloroethane	20.0		20.3	102	(66-130)
1,1,2-Trichloroethane	20.0		20.3	101	(82-126)
Trichloroethene	20.0		20.4	102	(77-124)
Trichlorofluoromethane	20.0		19.0	94.9	(38-123)
Vinyl Chloride	20.0		18.5	92.4	(27-138)
o-Xylene	20.0		21.5	108	(79-124)
mp-Xylene	40.0		45.3	113	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Lab File ID: 515061708.D Date Analyzed: 6/17/2015

Instrument ID: ms05.i Time Analyzed: 13:44

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	864583	6.033	998381	7.806	2042815	4.041
UPPER LIMIT	1729166	6.533	1996762	8.306	4085630	4.541
LOWER LIMIT	432292	5.533	499191	7.306	1021408	3.541
SAMPLE NO.						
2193058(LCS)	888170	6.032	1053562	7.806	2124851	4.041

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Lab File ID: 515062701.D Date Analyzed: 6/27/2015

Instrument ID: ms05.i Time Analyzed: 10:28

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	766044	6.038	864040	7.806	2001113	4.041
UPPER LIMIT	1532088	6.538	1728080	8.306	4002226	4.541
LOWER LIMIT	383022	5.538	432020	7.306	1000557	3.541
SAMPLE NO.						
1800	766044	6.038	864040	7.806	2001113	4.041
2197921(MB)	769518	6.038	864083	7.806	1994355	4.041
2197922(LCS)	734626	6.038	850590	7.806	1931271	4.041
TB-062515	743302	6.038	835014	7.806	1932176	4.041
MRC-MW-14C-062515	721204	6.038	812500	7.806	1862523	4.041
MRC-MW-106B/C-062	709305	6.038	806717	7.806	1833498	4.041
MRC-MW-70A-062515	720643	6.038	822667	7.806	1852097	4.041
MRC-MW-70B-062515	719015	6.038	816960	7.806	1859569	4.041
MRC-MW-12C-062515	715202	6.038	796283	7.806	1825590	4.041
MRC-MW-13A-062515	709204	6.038	808735	7.806	1816082	4.041
MRC-MW-63A-062515	706177	6.038	803968	7.806	1820838	4.041
MRC-MW-107B/C-062	694188	6.038	780386	7.806	1757494	4.041

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Lab File ID: 515062901.D Date Analyzed: 6/29/2015

Instrument ID: ms05.i Time Analyzed: 19:04

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	679662	6.038	772555	7.806	1718021	4.041
UPPER LIMIT	1359324	6.538	1545110	8.306	3436042	4.541
LOWER LIMIT	339831	5.538	386278	7.306	859011	3.541
SAMPLE NO.						
1800	679662	6.038	772555	7.806	1718021	4.041
2198773(MB)	691950	6.038	783648	7.806	1741603	4.041
2198774(LCS)	697620	6.038	815185	7.806	1752871	4.041
MRC-MW-11C-062515	686780	6.038	792057	7.806	1724424	4.041
MRC-MW-70B-062515	663091	6.038	767661	7.806	1677143	4.041

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

Semivolatile Organics by 522 Summary Forms

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.36

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	1800	1800	06/26/15	1736	8.36	
02	2197628	2197628	06/26/15	2339	8.36	
03	2197629LCSMI	2197629	06/27/15	0003	8.36	
04	MIDCHECK-5	MIDCHECK-5	06/27/15	0536	8.36	
05	MRC-MW-14C-0	2079226002	06/27/15	0717	8.36	
06	MRC-MW-70A-0	2079226004	06/27/15	0743	8.39	
07	MRC-MW-70B-0	2079226005	06/27/15	0808	8.36	
08	MRC-MW-11C-0	2079226006	06/27/15	0833	8.36	
09	MRC-MW-12C-0	2079226007	06/27/15	0858	8.36	
10	MRC-MW-13A-0	2079226008	06/27/15	0923	8.36	
11	MRC-MW-63A-0	2079226009	06/27/15	0948	8.36	
12	1800	1800	06/29/15	0614	8.36	
13	MRC-MW-70B-0	2079226005	06/29/15	0645	8.36	
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	ICV	ICV	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	ICV	ICV	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF0.02: 12081303 RF0.05: 12081304 RF0.1: 12081305
RF0.2: 12081306 RF0.5: 12081307 RF1: 12081308

COMPOUND	RF0.02	RF0.05	RF0.1	RF0.2	RF0.5	RF1
1,4-Dioxane	249	394	889	1829	4280	8555
1,4-Dioxane-d8	0.708	0.704	0.721	0.709	0.711	0.706

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RF1.5: 12081309 RF2: 12081310 RF3: 12081311

COMPOUND	RF1.5	RF2	RF3
1,4-Dioxane	16492	40374	79045
1,4-Dioxane-d8	0.712	0.719	0.716

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: h TMM047

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT1: 12081303 RT2: 12081304 RT3: 12081305
RT4: 12081306 RT5: 12081307 RT6: 12081308

COMPOUND	RT1	RT2	RT3	RT4	RT5	RT6
1,4-Dioxane	8.451	8.437	8.451	8.451	8.451	8.451
1,4-Dioxane-d8	8.379	8.364	8.378	8.379	8.378	8.379

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

LAB FILE ID: RT7: 12081309 RT8: 12081310 RT9: 12081311

COMPOUND	RT7	RT8	RT9	MEAN RT	RT WINDOW FROM	RT WINDOW TO
1,4-Dioxane	8.451	8.437	8.437	8.446	7.801	9.072
1,4-Dioxane-d8	8.378	8.364	8.379	8.375	7.743	9.014

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date: 06/26/15 Time: 1736

Lab File ID: 12062601 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.75e-003	3.5e-003	1.1919871	0.00001	7.14	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6212397	0.6212397	0.00001	-12.75	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date: 06/27/15 Time: 0536

Lab File ID: 12062616 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.22e-002	5.e-002	1.5120256	0.00001	-15.60	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6482773	0.6482773	0.00001	-8.95	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Instrument ID: MS12 Calibration Date: 06/29/15 Time: 0614

Lab File ID: 12062901 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.51e-003	3.5e-003	1.2711265	0.00001	0.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.7603977	0.7603977	0.00001	6.80	30.00	AVRG

FORM VII SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2197628

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Lab File ID: 12062602 Lab Sample ID: 2197628

Instrument ID: MS12 Date Extracted: 06/26/15

Matrix: (soil/water) WATER Date Analyzed: 06/26/15

Level:(low/med) LOW Time Analyzed: 2339

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2197629LCSMI	2197629	12062603	06/27/15
02	MRC-MW-14C-0	2079226002	12062620	06/27/15
03	MRC-MW-70A-0	2079226004	12062621	06/27/15
04	MRC-MW-70B-0	2079226005	12062622	06/27/15
05	MRC-MW-11C-0	2079226006	12062623	06/27/15
06	MRC-MW-12C-0	2079226007	12062624	06/27/15
07	MRC-MW-13A-0	2079226008	12062625	06/27/15
08	MRC-MW-63A-0	2079226009	12062626	06/27/15
09	MRC-MW-70B-0	2079226005	12062902	06/29/15
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
2197628

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Matrix: (soil/water) WATER Lab Sample ID: 2197628

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12062602

Level: (low/med) LOW Date Received: 06/26/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 06/26/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 06/26/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 2

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2197628	79								0
02	2197629LCSMI	82								0
03	MRC-MW-14C-0	82								0
04	MRC-MW-70A-0	25*								1
05	MRC-MW-70B-0	85								0
06	MRC-MW-11C-0	82								0
07	MRC-MW-12C-0	83								0
08	MRC-MW-13A-0	79								0
09	MRC-MW-63A-0	82								0
10	MRC-MW-70B-0	94								0
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1	= 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

Matrix Spike - Sample No.: INITIAL CALIBRATION VERIFICATION

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

Matrix Spike - Sample No.: 2197629LCSMID

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	1.00000	0.00	0.902558	90	70-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 06/26/15

Lab File ID (Standard): 12062601 Time Analyzed: 1736

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	52788	6.35				
	UPPER LIMIT	68624	6.85				
	LOWER LIMIT	36952	5.85				
	SAMPLE NO.						
01	2197628	56296	6.35				
02	2197629LCSMI	57509	6.35				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 06/27/15

Lab File ID (Standard): 12062616 Time Analyzed: 0536

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	61358	6.35				
	UPPER LIMIT	79765	6.85				
	LOWER LIMIT	42951	5.85				
	SAMPLE NO.						
01	MRC-MW-14C-0	57104	6.35				
02	MRC-MW-70A-0	59019	6.34				
03	MRC-MW-70B-0	66006	6.35				
04	MRC-MW-11C-0	69690	6.35				
05	MRC-MW-12C-0	68674	6.35				
06	MRC-MW-13A-0	64696	6.35				
07	MRC-MW-63A-0	66799	6.35				
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: TMM047

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 06/29/15

Lab File ID (Standard): 12062901 Time Analyzed: 0614

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	58835	6.34				
UPPER LIMIT	76486	6.84				
LOWER LIMIT	41185	5.84				
SAMPLE NO.						
01 MRC-MW-70B-0	63552	6.35				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM047

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	ICV	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

Total Metals by Method 6010 Summary Forms

6010C 3015

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.996	1.000	100		90 - 110	P	6/29/2015	08:28	062915A 30
CCV	Iron	2.535	2.500	101		90 - 110	P	6/29/2015	08:40	062915A 30
CCV	Iron	2.583	2.500	103		90 - 110	P	6/29/2015	10:24	062915A 30
CCV	Iron	2.559	2.500	102		90 - 110	P	6/29/2015	11:22	062915A 30
CCV	Iron	2.469	2.500	99		90 - 110	P	6/29/2015	12:07	062915A 30
LLCCV	Iron	0.060	0.060	100		70 - 130	P	6/29/2015	12:20	062915A 30

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.064	0.060	107		70 - 130	P	6/29/2015	08:37	062915A 3

6010C 3015

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	6/29/2015	08:33	062915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	6/29/2015	10:29	062915A 3015
CCB	Iron	0.027	J	0.060	0.022	0.060	P	6/29/2015	11:26	062915A 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	6/29/2015	12:17	062915A 3015

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2198079			**QC-WATER**								
	Iron	0.067	U		0.067	0.022	0.067	P	6/29/2015	10:52	062915A 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	115.6	125.0	92		80 - 120%	6/29/2015	08:47	062915A 3015
ICSAB									
	Iron	121.3	125.0	97		80 - 120%	6/29/2015	08:51	062915A 3015
ICSA									
	Iron	108.8	125.0	87		80 - 120%	6/29/2015	12:24	062915A 3015
ICSAB									
	Iron	112.8	125.0	90		80 - 120%	6/29/2015	12:27	062915A 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2198080									
	Iron	mg/L	1.11	1.199		108		80 - 120	P

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	81631						
2198079	MB for HBN 81631 [MDIG/51521	MB	QC-WAT	6/28/15	45.0	50.0	
2198080	LCS for HBN 81631 [MDIG/51521	LCS	QC-WAT	6/28/15	45.0	50.0	
2079226002	MRC-MW-14C-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226004	MRC-MW-70A-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226009	MRC-MW-63A-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226010	MRC-MW-107B/C-062515	SAM	WATER	6/28/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062915A 3015

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICAL1	1.00	0810												X													
ICAL2	1.00	0814												X													
ICAL3	1.00	0817												X													
ICAL4	1.00	0821												X													
ICAL5	1.00	0825												X													
ICV1	1.00	0828												X													
ICB1	1.00	0833												X													
CRDL1	1.00	0837												X													
CCV1	1.00	0840												X													
HIGH	1.00	0844												X													
ICS-A1	1.00	0847												X													
ICS-AB1	1.00	0851												X													
ZZZZZZ	1.00	0858																									
ZZZZZZ	1.00	0901																									
ZZZZZZ	1.00	0905																									
ZZZZZZ	1.00	0909																									
ZZZZZZ	1.00	0912																									
ZZZZZZ	1.00	0916																									
ZZZZZZ	1.00	0919																									
ZZZZZZ	1.00	0923																									
ZZZZZZ	1.00	0927																									
ZZZZZZ	1.00	0931																									
ZZZZZZ	1.00	0934																									
ZZZZZZ	1.00	0938																									
ZZZZZZ	1.00	0942																									
ZZZZZZ	1.00	0945																									
ZZZZZZ	1.00	0949																									
ZZZZZZ	2.00	0953																									
ZZZZZZ	1.00	0957																									
ZZZZZZ	1.00	1001																									
ZZZZZZ	1.00	1004																									
ZZZZZZ	1.00	1008																									
ZZZZZZ	5.00	1012																									
ZZZZZZ	5.00	1016																									
ZZZZZZ	1.00	1020																									
CCV4	1.00	1024												X													

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062915A 3015

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB2	1.00	1029												X													
ZZZZZZ	1.00	1032																									
ZZZZZZ	1.00	1036																									
ZZZZZZ	1.00	1040																									
ZZZZZZ	1.00	1044																									
ZZZZZZ	1.00	1048																									
2198079	1.00	1052												X													
2198080	1.00	1055												X													
ZZZZZZ	5.00	1059																									
ZZZZZZ	5.00	1103																									
ZZZZZZ	5.00	1107																									
ZZZZZZ	5.00	1111																									
2079226002	1.00	1115												X													
2079226004	1.00	1118												X													
CCV5	1.00	1122												X													
CCB3	1.00	1126												X													
2079226009	1.00	1129												X													
2079226010	1.00	1133												X													
ZZZZZZ	1.00	1137																									
ZZZZZZ	1.00	1141																									
ZZZZZZ	5.00	1144																									
ZZZZZZ	5.00	1148																									
ZZZZZZ	1.00	1152																									
ZZZZZZ	1.00	1156																									
ZZZZZZ	1.00	1200																									
ZZZZZZ	1.00	1204																									
CCV6	1.00	1207												X													
ZZZZZZ	1.00	1211																									
CCB5	1.00	1217												X													
LLCCV	1.00	1220												X													
ICS-A3	1.00	1224												X													
ICS-AB3	1.00	1227												X													
ZZZZZZ	1.00	1232																									
ZZZZZZ	1.00	1235																									
ZZZZZZ	5.00	1239																									
ZZZZZZ	1.00	1243																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062915A 3015

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1247																								
ZZZZZZ	1.00	1250																								
ZZZZZZ	1.00	1254																								
ZZZZZZ	1.00	1258																								
ZZZZZZ	1.00	1302																								
ZZZZZZ	1.00	1305																								
ZZZZZZ	1.00	1309																								
ZZZZZZ	1.00	1313																								
ZZZZZZ	1.00	1316																								
ZZZZZZ	1.00	1320																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1328																								
ZZZZZZ	1.00	1331																								
ZZZZZZ	1.00	1335																								
ZZZZZZ	1.00	1339																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1346																								
ZZZZZZ	1.00	1350																								
ZZZZZZ	1.00	1354																								
ZZZZZZ	1.00	1357																								
ZZZZZZ	1.00	1401																								
ZZZZZZ	1.00	1405																								
ZZZZZZ	1.00	1408																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1416																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1423																								
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1431																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	1.00	1438																								
ZZZZZZ	1.00	1442																								
ZZZZZZ	1.00	1445																								
ZZZZZZ	1.00	1449																								
ZZZZZZ	1.00	1453																								
ZZZZZZ	1.00	1458																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 062915A 3015

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1502																								
ZZZZZZ	5.00	1505																								
ZZZZZZ	5.00	1509																								
ZZZZZZ	5.00	1513																								
ZZZZZZ	5.00	1517																								
ZZZZZZ	5.00	1520																								
ZZZZZZ	5.00	1524																								
ZZZZZZ	5.00	1528																								
ZZZZZZ	5.00	1532																								
ZZZZZZ	1.00	1536																								
ZZZZZZ	1.00	1539																								
ZZZZZZ	5.00	1543																								
ZZZZZZ	5.00	1547																								
ZZZZZZ	5.00	1551																								
ZZZZZZ	5.00	1555																								
ZZZZZZ	5.00	1558																								
ZZZZZZ	5.00	1602																								
ZZZZZZ	5.00	1606																								
ZZZZZZ	5.00	1610																								
ZZZZZZ	5.00	1614																								
ZZZZZZ	5.00	1618																								
ZZZZZZ	1.00	1621																								
ZZZZZZ	1.00	1625																								
ZZZZZZ	5.00	1629																								
ZZZZZZ	5.00	1633																								
ZZZZZZ	5.00	1636																								
ZZZZZZ	1.00	1640																								
ZZZZZZ	1.00	1644																								
ZZZZZZ	1.00	1648																								
ZZZZZZ	1.00	1651																								
ZZZZZZ	1.00	1655																								

Total Metals by Method 6020 Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1014	0.1000	101		90 - 110	M	6/29/2015	07:31	A062915 07
	Arsenic	0.1003	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Barium	0.0999	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Beryllium	0.0999	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Cadmium	0.1008	0.1000	101		90 - 110	M	6/29/2015	07:31	A062915 07
	Chromium	0.1024	0.1000	102		90 - 110	M	6/29/2015	07:31	A062915 07
	Cobalt	0.1003	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Copper	0.1007	0.1000	101		90 - 110	M	6/29/2015	07:31	A062915 07
	Lead	0.0996	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Manganese	0.1006	0.1000	101		90 - 110	M	6/29/2015	07:31	A062915 07
	Molybdenum	0.1000	0.1000	100		90 - 110	M	6/29/2015	07:31	A062915 07
	Nickel	0.0988	0.1000	99		90 - 110	M	6/29/2015	07:31	A062915 07
	Selenium	0.0989	0.1000	99		90 - 110	M	6/29/2015	07:31	A062915 07
	Silver	0.0976	0.1000	98		90 - 110	M	6/29/2015	07:31	A062915 07
	Thallium	0.0985	0.1000	98		90 - 110	M	6/29/2015	07:31	A062915 07
	Vanadium	0.1017	0.1000	102		90 - 110	M	6/29/2015	07:31	A062915 07
LLICV										
	Antimony	0.0022	0.0020	110		70 - 130	M	6/29/2015	07:38	A062915 07
	Arsenic	0.0027	0.0030	90		70 - 130	M	6/29/2015	07:38	A062915 07
	Barium	0.0052	0.0050	104		70 - 130	M	6/29/2015	07:38	A062915 07
	Beryllium	0.0011	0.0010	110		70 - 130	M	6/29/2015	07:38	A062915 07
	Cadmium	0.0012	0.0010	120		70 - 130	M	6/29/2015	07:38	A062915 07
	Chromium	0.0022	0.0020	110		70 - 130	M	6/29/2015	07:38	A062915 07
	Cobalt	0.0051	0.0050	102		70 - 130	M	6/29/2015	07:38	A062915 07
	Copper	0.0052	0.0050	104		70 - 130	M	6/29/2015	07:38	A062915 07
	Lead	0.0021	0.0020	105		70 - 130	M	6/29/2015	07:38	A062915 07
	Manganese	0.0052	0.0050	104		70 - 130	M	6/29/2015	07:38	A062915 07
	Molybdenum	0.0023	0.0020	115		70 - 130	M	6/29/2015	07:38	A062915 07
	Nickel	0.0052	0.0050	104		70 - 130	M	6/29/2015	07:38	A062915 07
	Selenium	0.0047	0.0050	94		70 - 130	M	6/29/2015	07:38	A062915 07
	Silver	0.0022	0.0020	110		70 - 130	M	6/29/2015	07:38	A062915 07
	Thallium	0.0011	0.0010	110		70 - 130	M	6/29/2015	07:38	A062915 07
	Vanadium	0.0022	0.0020	110		70 - 130	M	6/29/2015	07:38	A062915 07

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0996	0.1000	100		90 - 110	M	6/29/2015	11:09	A062915 07
	Arsenic	0.1037	0.1000	104		90 - 110	M	6/29/2015	11:09	A062915 07
	Barium	0.1000	0.1000	100		90 - 110	M	6/29/2015	11:09	A062915 07
	Beryllium	0.0922	0.1000	92		90 - 110	M	6/29/2015	11:09	A062915 07
	Cadmium	0.0976	0.1000	98		90 - 110	M	6/29/2015	11:09	A062915 07
	Chromium	0.1033	0.1000	103		90 - 110	M	6/29/2015	11:09	A062915 07
	Cobalt	0.1025	0.1000	102		90 - 110	M	6/29/2015	11:09	A062915 07
	Copper	0.1002	0.1000	100		90 - 110	M	6/29/2015	11:09	A062915 07
	Lead	0.1002	0.1000	100		90 - 110	M	6/29/2015	11:09	A062915 07
	Manganese	0.1033	0.1000	103		90 - 110	M	6/29/2015	11:09	A062915 07
	Molybdenum	0.0954	0.1000	95		90 - 110	M	6/29/2015	11:09	A062915 07
	Nickel	0.0983	0.1000	98		90 - 110	M	6/29/2015	11:09	A062915 07
	Selenium	0.1041	0.1000	104		90 - 110	M	6/29/2015	11:09	A062915 07
	Silver	0.0942	0.1000	94		90 - 110	M	6/29/2015	11:09	A062915 07
	Thallium	0.0997	0.1000	100		90 - 110	M	6/29/2015	11:09	A062915 07
	Vanadium	0.1037	0.1000	104		90 - 110	M	6/29/2015	11:09	A062915 07
LLCCV										
	Antimony	0.0021	0.0020	105		70 - 130	M	6/29/2015	11:17	A062915 07
	Arsenic	0.0030	0.0030	100		70 - 130	M	6/29/2015	11:17	A062915 07
	Barium	0.0052	0.0050	104		70 - 130	M	6/29/2015	11:17	A062915 07
	Beryllium	0.0009	0.0010	90		70 - 130	M	6/29/2015	11:17	A062915 07
	Cadmium	0.0010	0.0010	100		70 - 130	M	6/29/2015	11:17	A062915 07
	Chromium	0.0019	0.0020	95		70 - 130	M	6/29/2015	11:17	A062915 07
	Cobalt	0.0049	0.0050	98		70 - 130	M	6/29/2015	11:17	A062915 07
	Copper	0.0049	0.0050	98		70 - 130	M	6/29/2015	11:17	A062915 07
	Lead	0.0019	0.0020	95		70 - 130	M	6/29/2015	11:17	A062915 07
	Manganese	0.0051	0.0050	102		70 - 130	M	6/29/2015	11:17	A062915 07
	Molybdenum	0.0021	0.0020	105		70 - 130	M	6/29/2015	11:17	A062915 07
	Nickel	0.0046	0.0050	92		70 - 130	M	6/29/2015	11:17	A062915 07
	Selenium	0.0049	0.0050	98		70 - 130	M	6/29/2015	11:17	A062915 07
	Silver	0.0019	0.0020	95		70 - 130	M	6/29/2015	11:17	A062915 07
	Thallium	0.0010	0.0010	100		70 - 130	M	6/29/2015	11:17	A062915 07
	Vanadium	0.0019	0.0020	95		70 - 130	M	6/29/2015	11:17	A062915 07

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0984	0.1000	98		90 - 110	M	6/29/2015	11:58	A062915 07
	Arsenic	0.1015	0.1000	102		90 - 110	M	6/29/2015	11:58	A062915 07
	Barium	0.0988	0.1000	99		90 - 110	M	6/29/2015	11:58	A062915 07
	Beryllium	0.0908	0.1000	91		90 - 110	M	6/29/2015	11:58	A062915 07
	Cadmium	0.0971	0.1000	97		90 - 110	M	6/29/2015	11:58	A062915 07
	Chromium	0.1027	0.1000	103		90 - 110	M	6/29/2015	11:58	A062915 07
	Cobalt	0.1018	0.1000	102		90 - 110	M	6/29/2015	11:58	A062915 07
	Copper	0.0999	0.1000	100		90 - 110	M	6/29/2015	11:58	A062915 07
	Lead	0.1000	0.1000	100		90 - 110	M	6/29/2015	11:58	A062915 07
	Manganese	0.1031	0.1000	103		90 - 110	M	6/29/2015	11:58	A062915 07
	Molybdenum	0.0949	0.1000	95		90 - 110	M	6/29/2015	11:58	A062915 07
	Nickel	0.0981	0.1000	98		90 - 110	M	6/29/2015	11:58	A062915 07
	Selenium	0.1050	0.1000	105		90 - 110	M	6/29/2015	11:58	A062915 07
	Silver	0.0936	0.1000	94		90 - 110	M	6/29/2015	11:58	A062915 07
	Thallium	0.1001	0.1000	100		90 - 110	M	6/29/2015	11:58	A062915 07
	Vanadium	0.1033	0.1000	103		90 - 110	M	6/29/2015	11:58	A062915 07
LLCCV										
	Antimony	0.0021	0.0020	105		70 - 130	M	6/29/2015	12:05	A062915 07
	Arsenic	0.0029	0.0030	97		70 - 130	M	6/29/2015	12:05	A062915 07
	Barium	0.0053	0.0050	106		70 - 130	M	6/29/2015	12:05	A062915 07
	Beryllium	0.0009	0.0010	90		70 - 130	M	6/29/2015	12:05	A062915 07
	Cadmium	0.0010	0.0010	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Chromium	0.0019	0.0020	95		70 - 130	M	6/29/2015	12:05	A062915 07
	Cobalt	0.0049	0.0050	98		70 - 130	M	6/29/2015	12:05	A062915 07
	Copper	0.0049	0.0050	98		70 - 130	M	6/29/2015	12:05	A062915 07
	Lead	0.0020	0.0020	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Manganese	0.0050	0.0050	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Molybdenum	0.0020	0.0020	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Nickel	0.0049	0.0050	98		70 - 130	M	6/29/2015	12:05	A062915 07
	Selenium	0.0052	0.0050	104		70 - 130	M	6/29/2015	12:05	A062915 07
	Silver	0.0020	0.0020	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Thallium	0.0010	0.0010	100		70 - 130	M	6/29/2015	12:05	A062915 07
	Vanadium	0.0021	0.0020	105		70 - 130	M	6/29/2015	12:05	A062915 07

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.0995	0.1000	100		90 - 110	M	6/29/2015	13:07	A062915 07
	Arsenic	0.1004	0.1000	100		90 - 110	M	6/29/2015	13:07	A062915 07
	Barium	0.0987	0.1000	99		90 - 110	M	6/29/2015	13:07	A062915 07
	Beryllium	0.0899	0.1000	90		90 - 110	M	6/29/2015	13:07	A062915 07
	Cadmium	0.0974	0.1000	97		90 - 110	M	6/29/2015	13:07	A062915 07
	Chromium	0.1037	0.1000	104		90 - 110	M	6/29/2015	13:07	A062915 07
	Cobalt	0.1031	0.1000	103		90 - 110	M	6/29/2015	13:07	A062915 07
	Copper	0.1010	0.1000	101		90 - 110	M	6/29/2015	13:07	A062915 07
	Lead	0.1001	0.1000	100		90 - 110	M	6/29/2015	13:07	A062915 07
	Manganese	0.1035	0.1000	104		90 - 110	M	6/29/2015	13:07	A062915 07
	Molybdenum	0.0955	0.1000	96		90 - 110	M	6/29/2015	13:07	A062915 07
	Nickel	0.0985	0.1000	98		90 - 110	M	6/29/2015	13:07	A062915 07
	Selenium	0.1033	0.1000	103		90 - 110	M	6/29/2015	13:07	A062915 07
	Silver	0.0938	0.1000	94		90 - 110	M	6/29/2015	13:07	A062915 07
	Thallium	0.1001	0.1000	100		90 - 110	M	6/29/2015	13:07	A062915 07
	Vanadium	0.1040	0.1000	104		90 - 110	M	6/29/2015	13:07	A062915 07
LLCCV										
	Antimony	0.0021	0.0020	105		70 - 130	M	6/29/2015	13:15	A062915 07
	Arsenic	0.0030	0.0030	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Barium	0.0052	0.0050	104		70 - 130	M	6/29/2015	13:15	A062915 07
	Beryllium	0.0010	0.0010	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Cadmium	0.0011	0.0010	110		70 - 130	M	6/29/2015	13:15	A062915 07
	Chromium	0.0019	0.0020	95		70 - 130	M	6/29/2015	13:15	A062915 07
	Cobalt	0.0049	0.0050	98		70 - 130	M	6/29/2015	13:15	A062915 07
	Copper	0.0050	0.0050	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Lead	0.0020	0.0020	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Manganese	0.0051	0.0050	102		70 - 130	M	6/29/2015	13:15	A062915 07
	Molybdenum	0.0022	0.0020	110		70 - 130	M	6/29/2015	13:15	A062915 07
	Nickel	0.0048	0.0050	96		70 - 130	M	6/29/2015	13:15	A062915 07
	Selenium	0.0055	0.0050	110		70 - 130	M	6/29/2015	13:15	A062915 07
	Silver	0.0020	0.0020	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Thallium	0.0010	0.0010	100		70 - 130	M	6/29/2015	13:15	A062915 07
	Vanadium	0.0021	0.0020	105		70 - 130	M	6/29/2015	13:15	A062915 07

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/29/2015	07:35	A062915 0705 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/29/2015	07:35	A062915 0705 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/29/2015	07:35	A062915 0705 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Molybdenum	0.0011	J	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	07:35	A062915 0705 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/29/2015	07:35	A062915 0705 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	07:35	A062915 0705 (
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/29/2015	11:13	A062915 0705 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/29/2015	11:13	A062915 0705 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/29/2015	11:13	A062915 0705 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Molybdenum	0.0011	J	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	11:13	A062915 0705 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/29/2015	11:13	A062915 0705 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	11:13	A062915 0705 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/29/2015	12:02	A062915 0705 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/29/2015	12:02	A062915 0705 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/29/2015	12:02	A062915 0705 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Molybdenum	0.0010	J	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	12:02	A062915 0705 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/29/2015	12:02	A062915 0705 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	12:02	A062915 0705 (

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	6/29/2015	13:11	A062915 0705 (
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	6/29/2015	13:11	A062915 0705 (
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	6/29/2015	13:11	A062915 0705 (
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Molybdenum	0.0011	J	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	6/29/2015	13:11	A062915 0705 (
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	6/29/2015	13:11	A062915 0705 (
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	6/29/2015	13:11	A062915 0705 (

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2198087			**QC-WATER**								
	Antimony	0.00222	U		0.0022	0.00074	0.00222	M	6/29/2015	11:32	A062915 0705 (
	Arsenic	0.00300	U		0.0030	0.00100	0.00300	M	6/29/2015	11:32	A062915 0705 (
	Barium	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Beryllium	0.001000	U		0.0010	0.000300	0.001000	M	6/29/2015	11:32	A062915 0705 (
	Cadmium	0.00111	U		0.0011	0.00037	0.00111	M	6/29/2015	11:32	A062915 0705 (
	Chromium	0.00222	U		0.0022	0.00074	0.00222	M	6/29/2015	11:32	A062915 0705 (
	Cobalt	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Copper	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Lead	0.00222	U		0.0022	0.00074	0.00222	M	6/29/2015	11:32	A062915 0705 (
	Manganese	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Molybdenum	0.00222	U		0.0022	0.00067	0.00222	M	6/29/2015	11:32	A062915 0705 (
	Nickel	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Selenium	0.00556	U		0.0056	0.00190	0.00556	M	6/29/2015	11:32	A062915 0705 (
	Silver	0.00222	U		0.0022	0.00074	0.00222	M	6/29/2015	11:32	A062915 0705 (
	Thallium	0.00100	U		0.0010	0.00030	0.00100	M	6/29/2015	11:32	A062915 0705 (
	Vanadium	0.00222	U		0.0022	0.00074	0.00222	M	6/29/2015	11:32	A062915 0705 (

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 7700 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	6/29/2015	07:42	A062915 0705
	Arsenic	0.0002				-0.00300 - -0.00300	6/29/2015	07:42	A062915 0705
	Barium	0.0004				-0.01000 - -0.01000	6/29/2015	07:42	A062915 0705
	Beryllium	0.00003				-0.001000 - -0.001000	6/29/2015	07:42	A062915 0705
	Cadmium	0.0008				-0.00100 - -0.00100	6/29/2015	07:42	A062915 0705
	Chromium	0.0006				-0.00400 - -0.00400	6/29/2015	07:42	A062915 0705
	Cobalt	0.0006				-0.00600 - -0.00600	6/29/2015	07:42	A062915 0705
	Copper	0.0014				-0.00500 - -0.00500	6/29/2015	07:42	A062915 0705
	Lead	0.0002				-0.00200 - -0.00200	6/29/2015	07:42	A062915 0705
	Manganese	0.0013				-0.01000 - -0.01000	6/29/2015	07:42	A062915 0705
	Molybdenum	2.0581	2.00000	103		80 - 120%	6/29/2015	07:42	A062915 0705
	Nickel	0.0009				-0.00500 - -0.00500	6/29/2015	07:42	A062915 0705
	Selenium	0.0001				-0.00500 - -0.00500	6/29/2015	07:42	A062915 0705
	Silver	0.0004				-0.00200 - -0.00200	6/29/2015	07:42	A062915 0705
	Thallium	0.00003				-0.001000 - -0.001000	6/29/2015	07:42	A062915 0705
	Vanadium	0.0003				-0.00200 - -0.00200	6/29/2015	07:42	A062915 0705
ICSAB									
	Antimony	0.0005				-0.00200 - -0.00200	6/29/2015	07:46	A062915 0705
	Arsenic	0.0194	0.02000	97		80 - 120%	6/29/2015	07:46	A062915 0705
	Barium	0.0004				-0.00500 - -0.00500	6/29/2015	07:46	A062915 0705
	Beryllium	0.00002				-0.001000 - -0.001000	6/29/2015	07:46	A062915 0705
	Cadmium	0.0098	0.01000	98		80 - 120%	6/29/2015	07:46	A062915 0705
	Chromium	0.0198	0.02000	99		80 - 120%	6/29/2015	07:46	A062915 0705
	Cobalt	0.0370	0.04000	92		80 - 120%	6/29/2015	07:46	A062915 0705
	Copper	0.0196	0.02000	98		80 - 120%	6/29/2015	07:46	A062915 0705
	Lead	0.0002				-0.00200 - -0.00200	6/29/2015	07:46	A062915 0705
	Manganese	0.0205	0.02000	102		80 - 120%	6/29/2015	07:46	A062915 0705
	Molybdenum	2.0746	2.00000	104		80 - 120%	6/29/2015	07:46	A062915 0705
	Nickel	0.0354	0.04000	88		80 - 120%	6/29/2015	07:46	A062915 0705
	Selenium	0.0194	0.02000	97		80 - 120%	6/29/2015	07:46	A062915 0705
	Silver	0.0190	0.02000	95		80 - 120%	6/29/2015	07:46	A062915 0705
	Thallium	0.00002				-0.001000 - -0.001000	6/29/2015	07:46	A062915 0705
	Vanadium	0.0403	0.04000	101		80 - 120%	6/29/2015	07:46	A062915 0705

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226002 **Client ID:** MRC-MW-14C-062515S **LIMS ID:** 2198089

Percent Solids for Sample: 0.00 **Spiked ID:** 2079226002S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.21		0.00		0.222	95		M
Arsenic	mg/L	75 - 125	0.210		0.001		0.222	94		M
Barium	mg/L	75 - 125	2.274		0.058		2.222	100		M
Beryllium	mg/L	75 - 125	0.18942		0.00100	U	0.22222	85		M
Cadmium	mg/L	75 - 125	0.205		0.000		0.222	92		M
Chromium	mg/L	75 - 125	0.228		0.006		0.222	100		M
Cobalt	mg/L	75 - 125	0.227		0.007		0.222	99		M
Copper	mg/L	75 - 125	0.221		0.003		0.222	98		M
Lead	mg/L	75 - 125	0.227		0.002		0.222	101		M
Manganese	mg/L	75 - 125	1.122		0.913		0.222	94		M
Molybdenum	mg/L	75 - 125	0.221		0.001		0.222	99		M
Nickel	mg/L	75 - 125	0.221		0.013		0.222	94		M
Selenium	mg/L	75 - 125	0.195		0.006	U	0.222	88		M
Silver	mg/L	75 - 125	0.109		0.002	U	0.111	98		M
Thallium	mg/L	75 - 125	0.2212		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.230		0.006		0.222	101		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226002 **Client ID:** MRC-MW-14C-062515SD **LIMS ID:** 2198090

Percent Solids for Sample: 0.00 **Spiked ID:** 2079226002SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.215		0.001		0.222	96		M
Barium	mg/L	75 - 125	2.287		0.058		2.222	100		M
Beryllium	mg/L	75 - 125	0.19015		0.00100	U	0.22222	86		M
Cadmium	mg/L	75 - 125	0.207		0.000		0.222	93		M
Chromium	mg/L	75 - 125	0.229		0.006		0.222	100		M
Cobalt	mg/L	75 - 125	0.230		0.007		0.222	100		M
Copper	mg/L	75 - 125	0.222		0.003		0.222	99		M
Lead	mg/L	75 - 125	0.228		0.002		0.222	102		M
Manganese	mg/L	75 - 125	1.126		0.913		0.222	96		M
Molybdenum	mg/L	75 - 125	0.225		0.001		0.222	101		M
Nickel	mg/L	75 - 125	0.223		0.013		0.222	95		M
Selenium	mg/L	75 - 125	0.199		0.006	U	0.222	90		M
Silver	mg/L	75 - 125	0.109		0.002	U	0.111	98		M
Thallium	mg/L	75 - 125	0.2222		0.0010	U	0.2222	100		M
Vanadium	mg/L	75 - 125	0.230		0.006		0.222	101		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226002S **Client ID:** MRC-MW-14C-062515SD **LIMS ID:** 2198090

Percent Solids for Sample: 0.00 **Duplicate ID:** 2079226002SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.21		0.22		5		M
Arsenic	mg/L	0 - 20	0.210		0.215		2		M
Barium	mg/L	0 - 20	2.274		2.287		1		M
Beryllium	mg/L	0 - 20	0.18942		0.19015		0		M
Cadmium	mg/L	0 - 20	0.205		0.207		1		M
Chromium	mg/L	0 - 20	0.228		0.229		0		M
Cobalt	mg/L	0 - 20	0.227		0.230		1		M
Copper	mg/L	0 - 20	0.221		0.222		0		M
Lead	mg/L	0 - 20	0.227		0.228		0		M
Manganese	mg/L	0 - 20	1.122		1.126		0		M
Molybdenum	mg/L	0 - 20	0.221		0.225		2		M
Nickel	mg/L	0 - 20	0.221		0.223		1		M
Selenium	mg/L	0 - 20	0.195		0.199		2		M
Silver	mg/L	0 - 20	0.109		0.109		0		M
Thallium	mg/L	0 - 20	0.2212		0.2222		0		M
Vanadium	mg/L	0 - 20	0.230		0.230		0		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2198088									
	Antimony	mg/L	0.2220	0.2238		101		80 - 120	M
	Arsenic	mg/L	0.2220	0.2131		96		80 - 120	M
	Barium	mg/L	2.2220	2.2584		102		80 - 120	M
	Beryllium	mg/L	0.2220	0.1951		88		80 - 120	M
	Cadmium	mg/L	0.2220	0.2104		95		80 - 120	M
	Chromium	mg/L	0.2220	0.2309		104		80 - 120	M
	Cobalt	mg/L	0.2220	0.2295		103		80 - 120	M
	Copper	mg/L	0.2220	0.2258		102		80 - 120	M
	Lead	mg/L	0.2220	0.2296		103		80 - 120	M
	Manganese	mg/L	0.2220	0.2323		105		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2279		103		80 - 120	M
	Nickel	mg/L	0.2220	0.2190		99		80 - 120	M
	Selenium	mg/L	0.2220	0.1964		88		80 - 120	M
	Silver	mg/L	0.1110	0.1124		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2258		102		80 - 120	M
	Vanadium	mg/L	0.2220	0.2305		104		80 - 120	M

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
BLK	ZZZZZZ	0705												
BLK	BLK	0709	100		100		100		100		100		100	
STANDARD 1	STANDARD 1	0712	99		100		101		100		100		99	
STANDARD 2	STANDARD 2	0716	98		99		100		100		99		101	
STANDARD 3	STANDARD 3	0720	98		101		102		102		103		101	
STANDARD 4	STANDARD 4	0724	98		100		102		103		102		103	
STANDARD 5	STANDARD 5	0727	97		94		101		103		105		104	
ICV	ICV	0731	97		94		102		104		105		104	
ICB1	ICB	0735	97		101		101		100		105		101	
LLICV	LLICV	0738	98		95		103		104		106		104	
ICS-A1	ICSA	0742	87		100		95		103		107		102	
ICS-AB1	ICSAB	0746	89		102		97		103		104		103	
CHECK	ZZZZZZ	0750												
CHECK	ZZZZZZ	0754												
2197772	ZZZZZZ	0757												
2197773	ZZZZZZ	0801												
2079364001	ZZZZZZ	0805												
2079365001	ZZZZZZ	0809												
2079366004	ZZZZZZ	0812												
2079367001	ZZZZZZ	0816												
2079368001	ZZZZZZ	0820												
2079369001	ZZZZZZ	0824												
2197774	ZZZZZZ	0828												
2197775	ZZZZZZ	0832												
CCV1	ZZZZZZ	0835												
CCB1	ZZZZZZ	0839												
LLCCV	ZZZZZZ	0843												
LLCCV	ZZZZZZ	0850												
2079369001P	ZZZZZZ	0854												
2196798	ZZZZZZ	0858												
2196800	ZZZZZZ	0901												
2198154	ZZZZZZ	0905												
2198156	ZZZZZZ	0909												
2078424003	ZZZZZZ	0913												
2078424007	ZZZZZZ	0916												
2078424010	ZZZZZZ	0920												
2078745003	ZZZZZZ	0924												
2078745006	ZZZZZZ	0928												
CCV2	ZZZZZZ	0932												
CCB2	ZZZZZZ	0935												
LLCCV	ZZZZZZ	0939												
2078745009	ZZZZZZ	0943												
2078611001	ZZZZZZ	0946												
2078424003	ZZZZZZ	0950												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2078424007	ZZZZZZ	0954												
2078424010	ZZZZZZ	0958												
2078745003	ZZZZZZ	1001												
2078745006	ZZZZZZ	1005												
2078745009	ZZZZZZ	1009												
2078274001	ZZZZZZ	1012												
2196803	ZZZZZZ	1016												
CCV3	ZZZZZZ	1020												
CCB3	ZZZZZZ	1024												
LLCCV	ZZZZZZ	1028												
2196804	ZZZZZZ	1031												
2078274001P	ZZZZZZ	1035												
2078274002	ZZZZZZ	1039												
2078274002L	ZZZZZZ	1043												
2078078001	ZZZZZZ	1047												
2078078002	ZZZZZZ	1050												
2078078003	ZZZZZZ	1054												
2078078004	ZZZZZZ	1058												
2078086001	ZZZZZZ	1102												
2198157	ZZZZZZ	1106												
CCV4	CCV	1109	101		92		108		106		101		103	
CCB4	CCB	1113	99		93		105		102		98		103	
LLCCV	LLCCV	1117	100		91		106		104		101		105	
2198158	ZZZZZZ	1121												
2078086001P	ZZZZZZ	1124												
2078086002	ZZZZZZ	1128												
2198087	MB for HBN 81633	1132	99		134	*	104		100		95		104	
2198088	LCS for HBN 8163	1136	98		134	*	104		101		98		103	
2079226002	MRC-MW-14C-06251	1139	96		134	*	103		100		98		104	
2079226002S	MRC-MW-14C-06251	1143	96		135	*	103		102		99		104	
2079226002S	MRC-MW-14C-06251	1147	96		133	*	102		101		94		101	
2079226004	MRC-MW-70A-06251	1150	87		130	*	97		102		102		101	
2079226009	MRC-MW-63A-06251	1154	88		133	*	97		99		92		99	
CCV5	CCV	1158	103		91		109		106		105		105	
CCB5	CCB	1202	100		92		105		101		98		101	
LLCCV	LLCCV	1205	100		90		105		102		101		107	
2079226010	MRC-MW-107B/C-06	1230	94		144	*	99		96		94		102	
2079185001	ZZZZZZ	1234												
2078966001	ZZZZZZ	1237												
2078967001	ZZZZZZ	1241												
2078968001	ZZZZZZ	1245												
2078969001	ZZZZZZ	1248												
2078970001	ZZZZZZ	1252												
2078971001	ZZZZZZ	1256												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2078972001	ZZZZZZ	1300												
2079369001P	ZZZZZZ	1303												
CCV6	CCV	1307	101		90		107		103		102		105	
CCB6	CCB	1311	99		90		105		100		95		103	
LLCCV	LLCCV	1315	99		87		105		101		100		103	
2078973001	ZZZZZZ	1318												
2078974001	ZZZZZZ	1322												
2079163001	ZZZZZZ	1326												
2079164001	ZZZZZZ	1329												
2079165001	ZZZZZZ	1333												
2079427001	ZZZZZZ	1337												
2079426001	ZZZZZZ	1341												
2079573001	ZZZZZZ	1344												
2079573001L	ZZZZZZ	1348												
CCV7	ZZZZZZ	1352												
CCB7	ZZZZZZ	1355												
LLCCV	ZZZZZZ	1359												
2077411002	ZZZZZZ	1403												
2194909	ZZZZZZ	1407												
2194910	ZZZZZZ	1411												
2077507003	ZZZZZZ	1414												
2078332013	ZZZZZZ	1418												
2195580	ZZZZZZ	1422												
2195581	ZZZZZZ	1426												
2078332014	ZZZZZZ	1429												
2077952001	ZZZZZZ	1433												
2077952002	ZZZZZZ	1437												
CCV8	ZZZZZZ	1441												
CCB8	ZZZZZZ	1444												
2078013001	ZZZZZZ	1448												
2078014001	ZZZZZZ	1452												
2077997001	ZZZZZZ	1455												
2078027002	ZZZZZZ	1459												
2078027003	ZZZZZZ	1503												
2078141001	ZZZZZZ	1507												
2078098002	ZZZZZZ	1510												
2196119	ZZZZZZ	1514												
2196120	ZZZZZZ	1518												
2078237001	ZZZZZZ	1521												
CCV9	ZZZZZZ	1525												
CCB9	ZZZZZZ	1529												
2196121	ZZZZZZ	1533												
2196826	ZZZZZZ	1536												
2196827	ZZZZZZ	1540												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Bi_209	Q	Element Ge_72	Q	Element In_115	Q	Element Sc_45	Q	Element Sc_45-2	Q	Element Sc_45-3	Q
2198105	ZZZZZZ	1544												
2198106	ZZZZZZ	1547												
2078658001	ZZZZZZ	1551												
2078660001	ZZZZZZ	1555												
2078612001	ZZZZZZ	1559												
2078827001	ZZZZZZ	1602												
2078827002	ZZZZZZ	1606												
CCV10	ZZZZZZ	1610												
CCB10	ZZZZZZ	1613												
2078827003	ZZZZZZ	1617												
2079221001	ZZZZZZ	1621												
2079221002	ZZZZZZ	1625												
2079221003	ZZZZZZ	1628												
2198107	ZZZZZZ	1632												
2198108	ZZZZZZ	1636												
2079221004	ZZZZZZ	1639												
2079221005	ZZZZZZ	1643												
2079221006	ZZZZZZ	1647												
2079222001	ZZZZZZ	1651												
CCV11	ZZZZZZ	1654												
CCB11	ZZZZZZ	1658												
2079222002	ZZZZZZ	1702												
2079222003	ZZZZZZ	1705												
2079222004	ZZZZZZ	1709												
2079222005	ZZZZZZ	1713												
2079222006	ZZZZZZ	1717												
2079222007	ZZZZZZ	1720												
2079222008	ZZZZZZ	1724												
2079225001	ZZZZZZ	1728												
2079225003	ZZZZZZ	1731												
2079225004	ZZZZZZ	1735												
CCV12	ZZZZZZ	1739												
CCB12	ZZZZZZ	1743												
2198109	ZZZZZZ	1746												
2078917001	ZZZZZZ	1750												
2196828	ZZZZZZ	1754												
2196829	ZZZZZZ	1758												
2078917002	ZZZZZZ	1801												
2078917004	ZZZZZZ	1805												
2078917005	ZZZZZZ	1809												
2078760001	ZZZZZZ	1813												
2196830	ZZZZZZ	1816												
CCV13	ZZZZZZ	1820												
CCB13	ZZZZZZ	1824												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0705												
BLK	0709	100											
STANDARD 1	0712	101											
STANDARD 2	0716	101											
STANDARD 3	0720	101											
STANDARD 4	0724	102											
STANDARD 5	0727	102											
ICV	0731	103											
ICB	0735	100											
LLICV	0738	103											
ICSA	0742	102											
ICSAB	0746	103											
ZZZZZZ	0750												
ZZZZZZ	0754												
ZZZZZZ	0757												
ZZZZZZ	0801												
ZZZZZZ	0805												
ZZZZZZ	0809												
ZZZZZZ	0812												
ZZZZZZ	0816												
ZZZZZZ	0820												
ZZZZZZ	0824												
ZZZZZZ	0828												
ZZZZZZ	0832												
ZZZZZZ	0835												
ZZZZZZ	0839												
ZZZZZZ	0843												
ZZZZZZ	0850												
ZZZZZZ	0854												
ZZZZZZ	0858												
ZZZZZZ	0901												
ZZZZZZ	0905												
ZZZZZZ	0909												
ZZZZZZ	0913												
ZZZZZZ	0916												
ZZZZZZ	0920												
ZZZZZZ	0924												
ZZZZZZ	0928												
ZZZZZZ	0932												
ZZZZZZ	0935												
ZZZZZZ	0939												
ZZZZZZ	0943												
ZZZZZZ	0946												
ZZZZZZ	0950												
ZZZZZZ	0954												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	0958												
ZZZZZZ	1001												
ZZZZZZ	1005												
ZZZZZZ	1009												
ZZZZZZ	1012												
ZZZZZZ	1016												
ZZZZZZ	1020												
ZZZZZZ	1024												
ZZZZZZ	1028												
ZZZZZZ	1031												
ZZZZZZ	1035												
ZZZZZZ	1039												
ZZZZZZ	1043												
ZZZZZZ	1047												
ZZZZZZ	1050												
ZZZZZZ	1054												
ZZZZZZ	1058												
ZZZZZZ	1102												
ZZZZZZ	1106												
CCV	1109	108											
CCB	1113	105											
LLCCV	1117	107											
ZZZZZZ	1121												
ZZZZZZ	1124												
ZZZZZZ	1128												
MB for HBN 81633	1132	105											
LCS for HBN 8163	1136	106											
MRC-MW-14C-06251	1139	105											
MRC-MW-14C-06251	1143	106											
MRC-MW-14C-06251	1147	105											
MRC-MW-70A-06251	1150	103											
MRC-MW-63A-06251	1154	102											
CCV	1158	109											
CCB	1202	106											
LLCCV	1205	106											
MRC-MW-107B/C-06	1230	102											
ZZZZZZ	1234												
ZZZZZZ	1237												
ZZZZZZ	1241												
ZZZZZZ	1245												
ZZZZZZ	1248												
ZZZZZZ	1252												
ZZZZZZ	1256												
ZZZZZZ	1300												
ZZZZZZ	1303												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
CCV	1307	108											
CCB	1311	105											
LLCCV	1315	106											
ZZZZZZ	1318												
ZZZZZZ	1322												
ZZZZZZ	1326												
ZZZZZZ	1329												
ZZZZZZ	1333												
ZZZZZZ	1337												
ZZZZZZ	1341												
ZZZZZZ	1344												
ZZZZZZ	1348												
ZZZZZZ	1352												
ZZZZZZ	1355												
ZZZZZZ	1359												
ZZZZZZ	1403												
ZZZZZZ	1407												
ZZZZZZ	1411												
ZZZZZZ	1414												
ZZZZZZ	1418												
ZZZZZZ	1422												
ZZZZZZ	1426												
ZZZZZZ	1429												
ZZZZZZ	1433												
ZZZZZZ	1437												
ZZZZZZ	1441												
ZZZZZZ	1444												
ZZZZZZ	1448												
ZZZZZZ	1452												
ZZZZZZ	1455												
ZZZZZZ	1459												
ZZZZZZ	1503												
ZZZZZZ	1507												
ZZZZZZ	1510												
ZZZZZZ	1514												
ZZZZZZ	1518												
ZZZZZZ	1521												
ZZZZZZ	1525												
ZZZZZZ	1529												
ZZZZZZ	1533												
ZZZZZZ	1536												
ZZZZZZ	1540												
ZZZZZZ	1544												
ZZZZZZ	1547												
ZZZZZZ	1551												

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ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Ma NRAS No.: SDG NO.: TMM-047

ICP-MS Instrument ID: AGILENT 7700 ICPMS Start Date: 06/29/2015 End Date: 06/29/2015

EPA Sample No.	Time	Internal Standards %RI For:											
		Element Tb_159	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
ZZZZZZ	1555												
ZZZZZZ	1559												
ZZZZZZ	1602												
ZZZZZZ	1606												
ZZZZZZ	1610												
ZZZZZZ	1613												
ZZZZZZ	1617												
ZZZZZZ	1621												
ZZZZZZ	1625												
ZZZZZZ	1628												
ZZZZZZ	1632												
ZZZZZZ	1636												
ZZZZZZ	1639												
ZZZZZZ	1643												
ZZZZZZ	1647												
ZZZZZZ	1651												
ZZZZZZ	1654												
ZZZZZZ	1658												
ZZZZZZ	1702												
ZZZZZZ	1705												
ZZZZZZ	1709												
ZZZZZZ	1713												
ZZZZZZ	1717												
ZZZZZZ	1720												
ZZZZZZ	1724												
ZZZZZZ	1728												
ZZZZZZ	1731												
ZZZZZZ	1735												
ZZZZZZ	1739												
ZZZZZZ	1743												
ZZZZZZ	1746												
ZZZZZZ	1750												
ZZZZZZ	1754												
ZZZZZZ	1758												
ZZZZZZ	1801												
ZZZZZZ	1805												
ZZZZZZ	1809												
ZZZZZZ	1813												
ZZZZZZ	1816												
ZZZZZZ	1820												
ZZZZZZ	1824												

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: AGILENT 7700 ICPMS **Date:** 1/19/2012

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh
SDG No.: TMM-047
Contract: TMM047|MRC GW 2015 **Lab Code:** CAS
Method: MS
Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	81633						
2198087	MB for HBN 81633 [MDIG/51523	MB	QC-WAT	6/28/15	45.0	50.0	
2198088	LCS for HBN 81633 [MDIG/51523	LCS	QC-WAT	6/28/15	45.0	50.0	
2079226002	MRC-MW-14C-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226002S	MRC-MW-14C-062515S	MS	WATER	6/28/15	45.0	50.0	
2079226002SD	MRC-MW-14C-062515SD	MSD	WATER	6/28/15	45.0	50.0	
2079226004	MRC-MW-70A-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226009	MRC-MW-63A-062515	SAM	WATER	6/28/15	45.0	50.0	
2079226010	MRC-MW-107B/C-062515	SAM	WATER	6/28/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0705																									
BLK	1.00	0709			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0712			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0716			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0720			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0724			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0727			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0731			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICB1	1.00	0735			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0738			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0742			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0746			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0750																											
ZZZZZZ	1.00	0754																											
ZZZZZZ	5.00	0757																											
ZZZZZZ	5.00	0801																											
ZZZZZZ	5.00	0805																											
ZZZZZZ	5.00	0809																											
ZZZZZZ	5.00	0812																											
ZZZZZZ	5.00	0816																											
ZZZZZZ	5.00	0820																											
ZZZZZZ	5.00	0824																											
ZZZZZZ	5.00	0828																											
ZZZZZZ	5.00	0832																											
ZZZZZZ	1.00	0835																											
ZZZZZZ	1.00	0839																											
ZZZZZZ	1.00	0843																											
ZZZZZZ	1.00	0850																											
ZZZZZZ	5.00	0854																											
ZZZZZZ	5.00	0858																											
ZZZZZZ	5.00	0901																											
ZZZZZZ	5.00	0905																											
ZZZZZZ	5.00	0909																											
ZZZZZZ	5.00	0913																											
ZZZZZZ	5.00	0916																											
ZZZZZZ	5.00	0920																											

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	5.00	0924																										
ZZZZZZ	5.00	0928																										
ZZZZZZ	1.00	0932																										
ZZZZZZ	1.00	0935																										
ZZZZZZ	1.00	0939																										
ZZZZZZ	5.00	0943																										
ZZZZZZ	5.00	0946																										
ZZZZZZ	25.00	0950																										
ZZZZZZ	25.00	0954																										
ZZZZZZ	25.00	0958																										
ZZZZZZ	25.00	1001																										
ZZZZZZ	25.00	1005																										
ZZZZZZ	25.00	1009																										
ZZZZZZ	5.00	1012																										
ZZZZZZ	5.00	1016																										
ZZZZZZ	1.00	1020																										
ZZZZZZ	1.00	1024																										
ZZZZZZ	1.00	1028																										
ZZZZZZ	5.00	1031																										
ZZZZZZ	5.00	1035																										
ZZZZZZ	5.00	1039																										
ZZZZZZ	25.00	1043																										
ZZZZZZ	5.00	1047																										
ZZZZZZ	5.00	1050																										
ZZZZZZ	5.00	1054																										
ZZZZZZ	5.00	1058																										
ZZZZZZ	5.00	1102																										
ZZZZZZ	5.00	1106																										
CCV4	1.00	1109			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB4	1.00	1113			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1117			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	5.00	1121																										
ZZZZZZ	5.00	1124																										
ZZZZZZ	5.00	1128																										
2198087	1.00	1132			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2198088	1.00	1136			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
2079226002	1.00	1139			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2079226002S	1.00	1143			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2079226002SD	1.00	1147			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2079226004	1.00	1150			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2079226009	1.00	1154			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCV5	1.00	1158			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB5	1.00	1202			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1205			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
2079226010	1.00	1230			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1234																											
ZZZZZZ	1.00	1237																											
ZZZZZZ	1.00	1241																											
ZZZZZZ	1.00	1245																											
ZZZZZZ	1.00	1248																											
ZZZZZZ	1.00	1252																											
ZZZZZZ	1.00	1256																											
ZZZZZZ	1.00	1300																											
ZZZZZZ	5.00	1303																											
CCV6	1.00	1307			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
CCB6	1.00	1311			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1315			X	X	X	X	X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1318																											
ZZZZZZ	1.00	1322																											
ZZZZZZ	1.00	1326																											
ZZZZZZ	1.00	1329																											
ZZZZZZ	1.00	1333																											
ZZZZZZ	5.00	1337																											
ZZZZZZ	5.00	1341																											
ZZZZZZ	5.00	1344																											
ZZZZZZ	25.00	1348																											
ZZZZZZ	1.00	1352																											
ZZZZZZ	1.00	1355																											
ZZZZZZ	1.00	1359																											
ZZZZZZ	10.00	1403																											
ZZZZZZ	10.00	1407																											
ZZZZZZ	10.00	1411																											

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1414																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1422																								
ZZZZZZ	1.00	1426																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1433																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1441																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	5.00	1448																								
ZZZZZZ	5.00	1452																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1459																								
ZZZZZZ	1.00	1503																								
ZZZZZZ	1.00	1507																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1514																								
ZZZZZZ	1.00	1518																								
ZZZZZZ	1.00	1521																								
ZZZZZZ	1.00	1525																								
ZZZZZZ	1.00	1529																								
ZZZZZZ	1.00	1533																								
ZZZZZZ	1.00	1536																								
ZZZZZZ	1.00	1540																								
ZZZZZZ	1.00	1544																								
ZZZZZZ	1.00	1547																								
ZZZZZZ	1.00	1551																								
ZZZZZZ	1.00	1555																								
ZZZZZZ	5.00	1559																								
ZZZZZZ	1.00	1602																								
ZZZZZZ	1.00	1606																								
ZZZZZZ	1.00	1610																								
ZZZZZZ	1.00	1613																								
ZZZZZZ	1.00	1617																								
ZZZZZZ	1.00	1621																								
ZZZZZZ	1.00	1625																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Method: M Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1628																								
ZZZZZZ	1.00	1632																								
ZZZZZZ	1.00	1636																								
ZZZZZZ	1.00	1639																								
ZZZZZZ	1.00	1643																								
ZZZZZZ	1.00	1647																								
ZZZZZZ	1.00	1651																								
ZZZZZZ	1.00	1654																								
ZZZZZZ	1.00	1658																								
ZZZZZZ	1.00	1702																								
ZZZZZZ	1.00	1705																								
ZZZZZZ	1.00	1709																								
ZZZZZZ	1.00	1713																								
ZZZZZZ	1.00	1717																								
ZZZZZZ	1.00	1720																								
ZZZZZZ	1.00	1724																								
ZZZZZZ	1.00	1728																								
ZZZZZZ	1.00	1731																								
ZZZZZZ	1.00	1735																								
ZZZZZZ	1.00	1739																								
ZZZZZZ	1.00	1743																								
ZZZZZZ	1.00	1746																								
ZZZZZZ	1.00	1750																								
ZZZZZZ	1.00	1754																								
ZZZZZZ	1.00	1758																								
ZZZZZZ	1.00	1801																								
ZZZZZZ	1.00	1805																								
ZZZZZZ	1.00	1809																								
ZZZZZZ	1.00	1813																								
ZZZZZZ	1.00	1816																								
ZZZZZZ	1.00	1820																								
ZZZZZZ	1.00	1824																								

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed Martin SAS No.: SDG No.: TMM-047

Instrument ID Number: AGILENT 7700 ICPMS Run Number: A062915 0705

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	07:05																									
BLK	1.00	07:09					X																				
STANDARD 1	1.00	07:12					X																				
STANDARD 2	1.00	07:16					X																				
STANDARD 3	1.00	07:20					X																				
STANDARD 4	1.00	07:24					X																				
STANDARD 5	1.00	07:27					X																				
ICV	1.00	07:31					X																				
ICB1	1.00	07:35					X																				
LLICV	1.00	07:38					X																				
ICS-A1	1.00	07:42					X																				
ICS-AB1	1.00	07:46					X																				
ZZZZZZ	1.00	07:50																									
ZZZZZZ	1.00	07:54																									
ZZZZZZ	5.00	07:57																									
ZZZZZZ	5.00	08:01																									
ZZZZZZ	5.00	08:05																									
ZZZZZZ	5.00	08:09																									
ZZZZZZ	5.00	08:12																									
ZZZZZZ	5.00	08:16																									
ZZZZZZ	5.00	08:20																									
ZZZZZZ	5.00	08:24																									
ZZZZZZ	5.00	08:28																									
ZZZZZZ	5.00	08:32																									
ZZZZZZ	1.00	08:35																									
ZZZZZZ	1.00	08:39																									
ZZZZZZ	1.00	08:43																									
ZZZZZZ	1.00	08:50																									
ZZZZZZ	5.00	08:54																									
ZZZZZZ	5.00	08:58																									
ZZZZZZ	5.00	09:01																									

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062915 0705

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	5.00	09:05																									
ZZZZZZ	5.00	09:09																									
ZZZZZZ	5.00	09:13																									
ZZZZZZ	5.00	09:16																									
ZZZZZZ	5.00	09:20																									
ZZZZZZ	5.00	09:24																									
ZZZZZZ	5.00	09:28																									
ZZZZZZ	1.00	09:32																									
ZZZZZZ	1.00	09:35																									
ZZZZZZ	1.00	09:39																									
ZZZZZZ	5.00	09:43																									
ZZZZZZ	5.00	09:46																									
ZZZZZZ	25.00	09:50																									
ZZZZZZ	25.00	09:54																									
ZZZZZZ	25.00	09:58																									
ZZZZZZ	25.00	10:01																									
ZZZZZZ	25.00	10:05																									
ZZZZZZ	25.00	10:09																									
ZZZZZZ	5.00	10:12																									
ZZZZZZ	5.00	10:16																									
ZZZZZZ	1.00	10:20																									
ZZZZZZ	1.00	10:24																									
ZZZZZZ	1.00	10:28																									
ZZZZZZ	5.00	10:31																									
ZZZZZZ	5.00	10:35																									
ZZZZZZ	5.00	10:39																									
ZZZZZZ	25.00	10:43																									
ZZZZZZ	5.00	10:47																									
ZZZZZZ	5.00	10:50																									
ZZZZZZ	5.00	10:54																									
ZZZZZZ	5.00	10:58																									

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062915 0705

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	5.00	11:02																									
ZZZZZZ	5.00	11:06																									
CCV4	1.00	11:09					X																				
CCB4	1.00	11:13					X																				
LLCCV	1.00	11:17					X																				
ZZZZZZ	5.00	11:21																									
ZZZZZZ	5.00	11:24																									
ZZZZZZ	5.00	11:28																									
2198087	1.00	11:32					X																				
2198088	1.00	11:36					X																				
2079226002	1.00	11:39					X																				
2079226002S	1.00	11:43					X																				
2079226002SD	1.00	11:47					X																				
2079226004	1.00	11:50					X																				
2079226009	1.00	11:54					X																				
CCV5	1.00	11:58					X																				
CCB5	1.00	12:02					X																				
LLCCV	1.00	12:05					X																				
2079226010	1.00	12:30					X																				
ZZZZZZ	1.00	12:34																									
ZZZZZZ	1.00	12:37																									
ZZZZZZ	1.00	12:41																									
ZZZZZZ	1.00	12:45																									
ZZZZZZ	1.00	12:48																									
ZZZZZZ	1.00	12:52																									
ZZZZZZ	1.00	12:56																									
ZZZZZZ	1.00	13:00																									
ZZZZZZ	5.00	13:03																									
CCV6	1.00	13:07					X																				
CCB6	1.00	13:11					X																				
LLCCV	1.00	13:15					X																				

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062915 0705

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	13:18																									
ZZZZZZ	1.00	13:22																									
ZZZZZZ	1.00	13:26																									
ZZZZZZ	1.00	13:29																									
ZZZZZZ	1.00	13:33																									
ZZZZZZ	5.00	13:37																									
ZZZZZZ	5.00	13:41																									
ZZZZZZ	5.00	13:44																									
ZZZZZZ	25.00	13:48																									
ZZZZZZ	1.00	13:52																									
ZZZZZZ	1.00	13:55																									
ZZZZZZ	1.00	13:59																									
ZZZZZZ	10.00	14:03																									
ZZZZZZ	10.00	14:07																									
ZZZZZZ	10.00	14:11																									
ZZZZZZ	1.00	14:14																									
ZZZZZZ	1.00	14:18																									
ZZZZZZ	1.00	14:22																									
ZZZZZZ	1.00	14:26																									
ZZZZZZ	1.00	14:29																									
ZZZZZZ	1.00	14:33																									
ZZZZZZ	1.00	14:37																									
ZZZZZZ	1.00	14:41																									
ZZZZZZ	1.00	14:44																									
ZZZZZZ	5.00	14:48																									
ZZZZZZ	5.00	14:52																									
ZZZZZZ	1.00	14:55																									
ZZZZZZ	1.00	14:59																									
ZZZZZZ	1.00	15:03																									
ZZZZZZ	1.00	15:07																									
ZZZZZZ	1.00	15:10																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062915 0705

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	15:14																										
ZZZZZZ	1.00	15:18																										
ZZZZZZ	1.00	15:21																										
ZZZZZZ	1.00	15:25																										
ZZZZZZ	1.00	15:29																										
ZZZZZZ	1.00	15:33																										
ZZZZZZ	1.00	15:36																										
ZZZZZZ	1.00	15:40																										
ZZZZZZ	1.00	15:44																										
ZZZZZZ	1.00	15:47																										
ZZZZZZ	1.00	15:51																										
ZZZZZZ	1.00	15:55																										
ZZZZZZ	5.00	15:59																										
ZZZZZZ	1.00	16:02																										
ZZZZZZ	1.00	16:06																										
ZZZZZZ	1.00	16:10																										
ZZZZZZ	1.00	16:13																										
ZZZZZZ	1.00	16:17																										
ZZZZZZ	1.00	16:21																										
ZZZZZZ	1.00	16:25																										
ZZZZZZ	1.00	16:28																										
ZZZZZZ	1.00	16:32																										
ZZZZZZ	1.00	16:36																										
ZZZZZZ	1.00	16:39																										
ZZZZZZ	1.00	16:43																										
ZZZZZZ	1.00	16:47																										
ZZZZZZ	1.00	16:51																										
ZZZZZZ	1.00	16:54																										
ZZZZZZ	1.00	16:58																										
ZZZZZZ	1.00	17:02																										
ZZZZZZ	1.00	17:05																										

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed Martin **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: AGILENT 7700 ICPMS **Run Number:** A062915 0705

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes
ZZZZZZ	1.00	17:09		
ZZZZZZ	1.00	17:13		
ZZZZZZ	1.00	17:17		
ZZZZZZ	1.00	17:20		
ZZZZZZ	1.00	17:24		
ZZZZZZ	1.00	17:28		
ZZZZZZ	1.00	17:31		
ZZZZZZ	1.00	17:35		
ZZZZZZ	1.00	17:39		
ZZZZZZ	1.00	17:43		
ZZZZZZ	1.00	17:46		
ZZZZZZ	1.00	17:50		
ZZZZZZ	1.00	17:54		
ZZZZZZ	1.00	17:58		
ZZZZZZ	1.00	18:01		
ZZZZZZ	1.00	18:05		
ZZZZZZ	1.00	18:09		
ZZZZZZ	1.00	18:13		
ZZZZZZ	1.00	18:16		
ZZZZZZ	1.00	18:20		
ZZZZZZ	1.00	18:24		

Total Mercury by 7470 Summary Forms

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0040	0.004	100		90 - 110	CV	6/29/2015	07:58	062915W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	6/29/2015	08:49	062915W
CCV	Mercury	0.0042	0.004	105		90 - 110	CV	6/29/2015	09:02	062915W
CCV	Mercury	0.0041	0.004	102		90 - 110	CV	6/29/2015	09:15	062915W

7470A

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/29/2015	07:59	062915W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/29/2015	08:50	062915W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/29/2015	09:03	062915W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	6/29/2015	09:17	062915W

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- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2198039			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	6/29/2015	09:00	062915W

7470A

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226009 **Client ID:** MRC-MW-63A-062515S **LIMS ID:** 2198041

Percent Solids for Sample: 0.00 **Spiked ID:** 2079226009S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0049		0.0005	U	0.0050	98.00		CV

7470A

- 5a -

MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226009 **Client ID:** MRC-MW-63A-062515SD **LIMS ID:** 2198042

Percent Solids for Sample: 0.00 **Spiked ID:** 2079226009SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0051		0.0005	U	0.0050	102.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2079226009S **Client ID:** MRC-MW-63A-062515SD **LIMS ID:** 2198042

Percent Solids for Sample: 0.00 **Duplicate ID:** 2079226009SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0049		0.0051		4.0		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2198040									
	Mercury	mg/L	0.0020	0.0022		110		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-047

Contract: TMM047|MRC GW 2015 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	81594						
2198039	MB for HBN 81594 [MDIG/51514	MB	QC-WAT	6/29/15	25.0	25.0	
2198040	LCS for HBN 81594 [MDIG/51514	LCS	QC-WAT	6/29/15	25.0	25.0	
2079226002	MRC-MW-14C-062515	SAM	WATER	6/29/15	25.0	25.0	
2079226004	MRC-MW-70A-062515	SAM	WATER	6/29/15	25.0	25.0	
2079226009	MRC-MW-63A-062515	SAM	WATER	6/29/15	25.0	25.0	
2079226009S	MRC-MW-63A-062515S	MS	WATER	6/29/15	25.0	25.0	
2079226009SD	MRC-MW-63A-062515SD	MSD	WATER	6/29/15	25.0	25.0	
2079226010	MRC-MW-107B/C-062515	SAM	WATER	6/29/15	25.0	25.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Cetac Hg Method: CV Run Number: 062915W

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	0751																X								
Standard #1 (0.2ppb	1.00	0752																X								
	1.00	0753																X								
	1.00	0754																X								
	1.00	0755																X								
	1.00	0756																X								
ICV1	1.00	0758																X								
ICB1	1.00	0759																X								
ZZZZZZ	1.00	0800																								
ZZZZZZ	1.00	0801																								
ZZZZZZ	1.00	0802																								
ZZZZZZ	1.00	0803																								
ZZZZZZ	1.00	0804																								
ZZZZZZ	1.00	0805																								
ZZZZZZ	1.00	0806																								
ZZZZZZ	1.00	0807																								
ZZZZZZ	1.00	0808																								
ZZZZZZ	1.00	0809																								
ZZZZZZ	1.00	0810																								
ZZZZZZ	1.00	0811																								
ZZZZZZ	1.00	0812																								
ZZZZZZ	1.00	0813																								
ZZZZZZ	1.00	0815																								
ZZZZZZ	1.00	0816																								
ZZZZZZ	1.00	0817																								
ZZZZZZ	1.00	0818																								
ZZZZZZ	1.00	0819																								
ZZZZZZ	1.00	0820																								
ZZZZZZ	1.00	0821																								
ZZZZZZ	1.00	0822																								
ZZZZZZ	1.00	0823																								
ZZZZZZ	1.00	0824																								
ZZZZZZ	1.00	0825																								
ZZZZZZ	1.00	0826																								
ZZZZZZ	1.00	0827																								
ZZZZZZ	1.00	0828																								

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM047|MRC GW 2015

Lab Code: CAS **Case No.:** Lockheed **SAS No.:** **SDG No.:** TMM-047

Instrument ID Number: Cetac Hg **Method:** CV **Run Number:** 062915W

Start Date: 6/29/2015 **End Date:** 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	0830																										
ZZZZZZ	1.00	0831																										
ZZZZZZ	1.00	0832																										
ZZZZZZ	1.00	0833																										
ZZZZZZ	1.00	0834																										
ZZZZZZ	1.00	0835																										
ZZZZZZ	1.00	0836																										
ZZZZZZ	1.00	0837																										
ZZZZZZ	1.00	0838																										
ZZZZZZ	1.00	0839																										
ZZZZZZ	1.00	0840																										
ZZZZZZ	1.00	0841																										
ZZZZZZ	1.00	0843																										
ZZZZZZ	1.00	0844																										
ZZZZZZ	1.00	0845																										
ZZZZZZ	1.00	0846																										
ZZZZZZ	1.00	0847																										
ZZZZZZ	1.00	0848																										
CCV4	1.00	0849																X										
CCB4	1.00	0850																X										
ZZZZZZ	1.00	0851																										
ZZZZZZ	1.00	0852																										
ZZZZZZ	1.00	0853																										
ZZZZZZ	1.00	0855																										
ZZZZZZ	1.00	0856																										
ZZZZZZ	1.00	0857																										
ZZZZZZ	1.00	0858																										
ZZZZZZ	1.00	0859																										
2198039	1.00	0900																X										
2198040	1.00	0901																X										
CCV5	1.00	0902																X										
CCB5	1.00	0903																X										
2079226002	1.00	0904																X										
2079226004	1.00	0906																X										
2079226009	1.00	0907																X										
2079226009S	1.00	0908																X										

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Cetac Hg Method: CV Run Number: 062915W

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
2079226009SD	1.00	0909																X								
2079226010	1.00	0910																X								
ZZZZZZ	1.00	0911																								
ZZZZZZ	1.00	0912																								
ZZZZZZ	1.00	0913																								
ZZZZZZ	1.00	0914																								
CCV6	1.00	0915																X								
CCB6	1.00	0917																X								
ZZZZZZ	1.00	0918																								
ZZZZZZ	1.00	0919																								
ZZZZZZ	1.00	0920																								
ZZZZZZ	1.00	0921																								
ZZZZZZ	1.00	0922																								
ZZZZZZ	1.00	0923																								
ZZZZZZ	1.00	0924																								
ZZZZZZ	1.00	0925																								
ZZZZZZ	1.00	0926																								
ZZZZZZ	1.00	0927																								
ZZZZZZ	1.00	0928																								
ZZZZZZ	1.00	0929																								
ZZZZZZ	1.00	0930																								
ZZZZZZ	1.00	1003																								
ZZZZZZ	1.00	1004																								
ZZZZZZ	1.00	1006																								
ZZZZZZ	1.00	1007																								
ZZZZZZ	1.00	1009																								
ZZZZZZ	1.00	1010																								
ZZZZZZ	1.00	1015																								
ZZZZZZ	1.00	1017																								
ZZZZZZ	1.00	1018																								
ZZZZZZ	1.00	1019																								
ZZZZZZ	1.00	1020																								
ZZZZZZ	1.00	1021																								
ZZZZZZ	1.00	1022																								
ZZZZZZ	1.00	1023																								
ZZZZZZ	1.00	1024																								

7470A

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM047|MRC GW 2015

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-047

Instrument ID Number: Cetac Hg Method: CV Run Number: 062915W

Start Date: 6/29/2015 End Date: 6/29/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1025																										
ZZZZZZ	1.00	1026																										
ZZZZZZ	1.00	1027																										
ZZZZZZ	1.00	1028																										
ZZZZZZ	1.00	1030																										
ZZZZZZ	1.00	1031																										

SAMPLE IDENTIFICATION	MRC-MW-106B/C-062515	
COMPOUND	1,1-Dichloroethene	
COMPOUND AREA	37913	
INTERNAL STANDARD AMOUNT (ug)	30	
DILUTION FACTOR	1	
INTERNAL STANDARD AREA	1833498	
AVERAGE RRF	0.28823	
37913 x 30 x 1 / 1833498 x 0.28823	2.15	µg/L

Sample Calc - VOC

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-106B/C-062515

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-047

Matrix (soil/water): WATER Lab Sample ID: 2079226003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 515062713.D

Level (low/med): Date Received: 6/25/15

% Moisture: not dec. 100.0 Date Analyzed: 6/27/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	0.95	J
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	0.33	J
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	2.2	
156-59-2	cis-1,2-Dichloroethene	0.91	J
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

Data File: 515062713.D
Report Date: 22-Jul-2015 16:03

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms05.i\5-2015\5150627.b\515062713.
Lab Smp Id: 2079226003 Client Smp ID: MRC-MW-106B/C-06251
Inj Date : 27-JUN-2015 14:48
Operator : JPA Inst ID: ms05.i
Smp Info : 2079226003;;1;;;;;
Misc Info : ZZ VOMS 36412 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms05.i\5-2015\5150627.b\5-8260b09.
Meth Date : 22-Jul-2015 15:54 joshua Quant Type: ISTD
Cal Date : 17-JUN-2015 13:23 Cal File: 515061707.D
Als bottle: 13
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	Compound Not Detected.						
4 Bromomethane	94	Compound Not Detected.						
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	Compound Not Detected.						
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	Compound Not Detected.						
10 1,1-Dichloroethene	61	2.295	2.295	(0.568)	37913	2.15221	2.15221	
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	2.328	2.328	(0.576)	37238	0.95226	0.952262(a)	
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	3.048	3.048	(0.754)	7794	0.32962	0.329619(a)	
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.337	3.337	(0.826)	16374	0.90951	0.909509(a)	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.577	3.577	(0.885)	386565	27.0352	27.0352	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.888	3.888	(0.962)	356262	26.4795	26.4795	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	4.041	4.041	(1.000)	1833498	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.139	4.139	(1.024)	194109	12.8232	12.8232	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.985	4.985	(0.826)	1379053	29.5329	29.5329	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

Sample Calc - VOC

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-047

Instrument ID: ms05.i Calibration Date(s): 6/17/2015 6/17/2015

Heated Purge: (Y/N) N Calibration Time(s): 12:20 14:27

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 515061705.D RRF005 = 515061706.D RRF020 = 515061707.D RRF050 = 515061708.D

RRF100 = 515061709.D RRF200 = 515061710.D RRF00.5 = 515061704.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.52200	0.38984		A		0.482920		10.06779
Dibromomethane	0.14410	0.13283		A		0.139470		5.16430
trans-1,4-Dichloro-2-butene	0.10550	0.08981		A		0.101990		8.16460
1,2-Dichlorobenzene	1.08345	1.01386		A		1.039620		5.42755
1,3-Dichlorobenzene	1.18157	1.04482		A		1.132150		5.42889
1,4-Dichlorobenzene	1.17071	1.14056		A		1.154140		3.05036
Dichlorodifluoromethane	0.28081	0.30556		A		0.294900		4.72685
1,1-Dichloroethane *	0.38330	0.36245		A		0.386890		4.55259
1,2-Dichloroethene, Total	0.28814	0.28184		A		0.289570		3.46907
1,2-Dichloroethane	0.26156	0.22823		A		0.259570		6.47798
1,1-Dichloroethene **	0.28829	0.27194		A		0.288230		3.69264
cis-1,2-Dichloroethene	0.29080	0.30881		A		0.294570		3.88055
trans-1,2-Dichloroethene	0.28549	0.25488		A		0.284570		5.66728
Dichlorofluoromethane	0.38621	0.36088		A		0.385620		5.90099
1,1-Dichloro-2-Propanone	231142			L	0.000000	124		0.99739
2,2-Dichloropropane	0.31606	0.29117		A		0.301530		5.05653
1,3-Dichloropropane	0.79415	0.63563		A		0.760330		8.15740
1,2-Dichloropropane **	0.22179	0.19736		A		0.216580		5.38493
1,1-Dichloropropene	0.32506	0.28587		A		0.308600		5.54595
cis-1,3-Dichloropropene	0.91174	0.68814		A		0.824140		10.46293
trans-1,3-Dichloropropene	0.77232	0.59003		A		0.703500		11.31590
1,3-Dichloropropene, Total	0.84203	0.63909		A		0.763820		10.79016
Diisobutylene	7783339	72684		L	0.000000	1.754970		0.99969
Diisopropyl ether	0.57493	0.47859		A		0.562950		8.25658
1,4-Dioxane		524		Q	-0.000020	0.000580	1.783000	0.99959
Ethyl Acetate	0.14313	0.13908		A		0.141830		4.95279
Ethyl ether	0.12860	0.10415		A		0.125540		8.47511
Ethyl Methacrylate	0.63853	0.46539		A		0.571490		13.00959
Ethyl tert-butyl ether	0.58809	0.50414		A		0.570980		7.84840
Ethylbenzene **	0.87285	0.72633		A		0.813600		7.58343
Freon 113	0.22393	0.20173		A		0.206740		6.85765
Heptane	2613268	4401		Q	-0.009450	0.176390	0.002540	0.99936
Hexachlorobutadiene	2439793			L	0.000000	2.737930		0.99896
Hexachloroethane	0.43439	0.33793		A		0.375070		10.28305
Hexane	0.39869	0.37340		A		0.373520		6.87811
2-Hexanone	0.21949	0.17524		A		0.217240		10.85051

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

Sample Report

MRC-MW-14C-062515
barium result: 0.058 mg/L

52.099 ug/L*50 final volume/45 initial volume /1000 = 0.0578 mg/L

Sample Table

Sample Name	2079226002
Data File Name	073SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\A062915.b
Acq Date Time	2015-06-29T11:39:49-04:00
Sample Type	Sample
Dilution	1
Comment	48902 ZMC
ISTD Ref FileName	002CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Fail
Vial	3404

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
V	51	1	No Gas	5.521	5.521	5.58	85200	0.01	1000	
Cr	52	1	No Gas	5.797	5.797	3.23	88600	0.01	1000	
Mn	55	1	No Gas	821.307	821.307	1.28	16395541	0.01	8000	
Co	59	1	No Gas	6.487	6.487	0.44	103383	0.01	1000	
Ni	60	1	No Gas	11.606	11.606	0.68	40163	0.03	1000	
Cu	63	1	No Gas	2.428	2.428	1.47	21083	0.01	5000	
Sr	88	1	No Gas	19.789	19.789	0.51	563744	0.00	1000	
Ag	107	1	No Gas	0.033	0.033	22.22	507	0.01	1000	
Al	27	1	No Gas	1493.467	1493.467	2.79	15998054	0.01	90000	
Sn	118	1	No Gas	0.666	0.666	0.98	7298	0.01	1000	
Ti	47	1	No Gas	38.011	38.011	4.56	47443	0.08	2000	
Zn	66	1	No Gas	14.299	14.299	0.80	31286	0.05	5000	
As	75	3	HEHe	0.813	0.813	3.61	150	0.54	1000	
As	75	1	No Gas	1.453	1.453	76.91	13660	0.01	1000	
Sb	121	1	No Gas	0.421	0.421	22.17	4851	0.01	1000	
Hg	201	1	No Gas	0.111	0.111	11.40	180	0.06	4	
Be	9	1	No Gas	0.146	0.146	5.15	313	0.05	1000	
Pb	208	1	No Gas	1.545	1.545	0.76	60783	0.00	1000	
Se	82	1	No Gas	0.705	0.705	51.41	158	0.45	1000	
Mo	98	1	No Gas	0.990	0.990	18.36	8212	0.01	3000	
Ba	137	1	No Gas	52.099	52.099	0.73	233656	0.02	1000	
Tl	205	1	No Gas	0.134	0.134	7.98	3834	0.00	1000	
U	238	1	No Gas	0.182	0.182	7.17	7495	0.00	1000	
Na	23	2	He	11297.653	11297.653	1.30	1211158	0.93	90000	
Mg	24	2	He	2706.718	2706.718	2.76	129128	2.10	90000	
K	39	2	He	9189.977	9189.977	1.42	180975	5.08	90000	
Se	82	3	HEHe	0.885	0.885	16.15	17	5.13	1000	
Cd	114	1	No Gas	0.102	0.102	10.69	720	0.01	1000	
Ca	44	1	No Gas	2533.626	2533.626	0.45	1102948	0.23	90000	
B	11	1	No Gas	23.500	23.500	2.79	32003	0.07	2000	
Fe	56	3	HEHe	8709.964	8709.964	0.85	20153613	0.04	90000	
Kr	84	1	No Gas	183.979	183.979	11.69	3731	4.93	100000	
Se	78	3	HEHe	0.318	0.318	23.58	8	4.04	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Sc	45	1	No Gas	2948669	0.83	2937466	100.38	70	120	
Sc	45	2	He	21831	1.06	22355	97.66	70	120	
Ge	72	1	No Gas	595937	1.85	444985	133.92	70	120	ISTD Failed
In	115	1	No Gas	2960422	1.07	2879516	102.81	70	120	
Tb	159	1	No Gas	4440656	0.98	4250572	104.47	70	120	
Bi	209	1	No Gas	2424849	1.18	2525667	96.01	70	120	
Sc	45	3	HEHe	76440	0.81	73411	104.13	70	120	

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **AUGUST 3, 2015**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC / 1,4-DIOXANE / METALS/PERCHLORATE**
LOCKHEED-MRC
SAMPLE DELIVERY GROUP (SDG) 2067894R

SAMPLES: 3/Aqueous/VOC

MRC-MW-80B-042915 MRC-MW-88B-042915 TB-042915

2/Aqueous/1,4-Dioxane

MRC-MW-80B-042915 MRC-MW-88B-042915

1/Aqueous/Metals

MRC-MW-80A-042915

Overview

The sample set for Lockheed- MRC, SDG 2067894R consists of three (3) aqueous environmental samples and a trip blank. Two (2) aqueous environmental samples and the trip blank were analyzed for volatile organic compounds (VOCs). Two (2) aqueous environmental samples were analyzed for 1.4-dioxane. One (1) aqueous environmental samples were analyzed for metals. There is no field duplicate pair included in this SDG.

The samples were collected on April 29, 2015 and analyzed by ALS. Analyses were conducted in accordance to SW-846 Method 8260, 6020A, 6010C, 7470A, and EPA Method 522 analytical and reporting protocol.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, compound identification, compound quantitation, and detection limits.

Areas of concern with respect to data quality are listed below.

Minor Problems

- The continuing calibration percent difference (%D) for methyl tert butyl ether was greater than the 20% quality control limit on May 1, 2015 @ 00:54 on instrument ms15.i. The nondetected methyl tert butyl ether results in the affected samples were qualified as estimated (UJ).

- Contamination was detected in the laboratory method blank associated with batch 2171725.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Bromomethane	0.50	2.50

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. Detected results less than the action level were qualified as (U).

- The laboratory control sample (LCS) percent recoveries (%Rs) of cis-1,3-dichloropropene and o-xylene were less than the lower quality control limit in batch 2171726. The nondetected cis-1,3-dichloropropene and o-xylene results were qualified as estimated (UJ).

- Contamination was detected in the laboratory preparation blank associated with batch 2172593.

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Iron	0.026	0.13

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. The detected iron result less than the action level was qualified as (U).

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Molybdenum was detected in the continuing calibration blanks analyzed on April 30, 2015 @ 11:39 and 13:36 at the following maximum concentration.

Contaminant	Maximum Concentration (mg/L)	Action Level (mg/L)
Molybdenum	0.0008	0.004

An action level of 5X the maximum concentration of contaminant was established in order to evaluate samples for blank contamination. Dilution factors were taken into account when applying the action level. No action was taken on the nondetected molybdenum result.

1,4-dioxane was reported in both the 8260B method and 522 method.

Nondetected results were reported to the method detection limit (MDL).

EXECUTIVE SUMMARY

Laboratory Performance Issues: Bromomethane and iron were detected in the laboratory blanks. The continuing calibration %Ds for methyl tert butyl ether exceeded quality control limits. The LCS %R of cis-1,3-dichloropropene and o-xylene were less than the lower quality control limit.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA National Functional for Organic Data Review (June 2008) and EPA National Functional Guidelines for Inorganic Data Validation (January 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

for Tetra Tech
Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-80A-042915		
SDG: 2067894R	LAB_ID	2067894002		
FRACTION: M	SAMP_DATE	4/29/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.00074	U	
ARSENIC		0.001	U	
BARIUM		0.028		
BERYLLIUM		0.00058	J	P
CADMIUM		0.00037	U	
CHROMIUM		0.002	J	P
COBALT		0.0019	U	
COPPER		0.0019	U	
IRON		0.023	U	A
LEAD		0.00074	U	
MANGANESE		0.014		
MERCURY		0.00017	U	
MOLYBDENUM		0.00074	U	
NICKEL		0.0053	J	P
SELENIUM		0.0019	U	
SILVER		0.00074	U	
THALLIUM		0.0003	U	
VANADIUM		0.00074	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-80A-042915			MRC-MW-80B-042915		
SDG: 2067894R	LAB_ID	2067894002			2067894003		
FRACTION: OS	SAMP_DATE	4/29/2015			4/29/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		4.7			15.4		

PROJ_NO: 06247	NSAMPLE	MRC-MW-80B-042915			MRC-MW-88B-042915			TB-042915		
SDG: 2067894R	LAB_ID	2067894003			2067894004			2067894001		
FRACTION: OV	SAMP_DATE	4/29/2015			4/29/2015			4/29/2015		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.22	U		0.22	U		0.22	U	
1,1,2,2-TETRACHLOROETHANE		0.34	U		0.34	U		0.34	U	
1,1,2-TRICHLOROETHANE		0.33	U		0.33	U		0.33	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.26	U		0.26	U		0.26	U	
1,1-DICHLOROETHANE		1.5			0.28	U		0.28	U	
1,1-DICHLOROETHENE		24.9			0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.93	U		0.93	U		0.93	U	
1,2,4-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U	
1,2-DIBROMO-3-CHLOROPROPANE		1.5	U		1.5	U		1.5	U	
1,2-DIBROMOETHANE		0.28	U		0.28	U		0.28	U	
1,2-DICHLOROBENZENE		0.38	U		0.38	U		0.38	U	
1,2-DICHLOROETHANE		0.32	U		0.32	U		0.32	U	
1,2-DICHLOROPROPANE		0.24	U		0.24	U		0.24	U	
1,3-DICHLOROBENZENE		0.25	U		0.25	U		0.25	U	
1,4-DICHLOROBENZENE		0.27	U		0.27	U		0.27	U	
1,4-DIOXANE		58.9	U		58.9	U		58.9	U	
2-BUTANONE		1.8	U		1.8	U		1.8	U	
2-HEXANONE		1.3	U		1.3	U		1.3	U	
4-METHYL-2-PENTANONE		1.5	U		1.5	U		1.5	U	
ACETONE		3.1	U		3.1	U		3.1	U	
BENZENE		0.23	U		0.23	U		0.23	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.27	U		0.27	U		0.27	U	
BROMOFORM		0.4	U		0.4	U		0.4	U	
BROMOMETHANE		0.39	U		0.47	U	A	0.49	J	P
CARBON DISULFIDE		0.23	U		0.23	U		0.23	U	
CARBON TETRACHLORIDE		0.31	U		0.31	U		0.31	U	
CHLOROBENZENE		0.19	U		0.19	U		0.19	U	
CHLORODIBROMOMETHANE		0.45	U		0.45	U		0.45	U	
CHLOROETHANE		0.33	U		0.33	U		0.33	U	
CHLOROFORM		0.21	U		0.21	U		0.21	U	
CHLOROMETHANE		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		2.4			0.32	U		0.32	U	
CIS-1,3-DICHLOROPROPENE		0.31	UJ	E	0.31	UJ	E	0.31	UJ	E
CYCLOHEXANE		0.29	U		0.29	U		0.29	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-80B-042915			MRC-MW-88B-042915			TB-042915		
SDG: 2067894R	LAB_ID	2067894003			2067894004			2067894001		
FRACTION: OV	SAMP_DATE	4/29/2015			4/29/2015			4/29/2015		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DICHLORODIFLUOROMETHANE		0.33	U		0.33	U		0.33	U	
ETHYLBENZENE		0.34	U		0.34	U		0.34	U	
ISOPROPYLBENZENE		0.22	U		0.22	U		0.22	U	
M+P-XYLENES		0.52	U		0.52	U		0.52	U	
METHYL ACETATE		0.32	U		0.32	U		0.32	U	
METHYL CYCLOHEXANE		0.3	U		0.3	U		0.3	U	
METHYL TERT-BUTYL ETHER		0.33	UJ	C	0.33	UJ	C	0.33	UJ	C
METHYLENE CHLORIDE		0.45	U		0.45	U		0.45	U	
O-XYLENE		0.33	UJ	E	0.33	UJ	E	0.33	UJ	E
STYRENE		0.24	U		0.24	U		0.24	U	
TETRACHLOROETHENE		0.35	U		0.35	U		0.35	U	
TOLUENE		0.23	U		0.23	U		0.23	U	
TRANS-1,2-DICHLOROETHENE		0.26	U		0.26	U		0.26	U	
TRANS-1,3-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		61.7			1.2			0.33	U	
TRICHLOROFLUOROMETHANE		0.24	U		0.24	U		0.24	U	
VINYL CHLORIDE		0.3	U		0.3	U		0.3	U	

Appendix B

Results as Reported by the Laboratory

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894001** Date Collected: 4/29/2015 00:00 Matrix: Water

Sample ID: **TB-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/1/15 03:41	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 03:41	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 03:41	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 03:41	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/1/15 03:41	JPA	A
Bromomethane	0.49J	J	ug/L	1.0	0.39	SW846 8260C		5/1/15 03:41	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/1/15 03:41	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 03:41	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 03:41	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/1/15 03:41	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/1/15 03:41	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/1/15 03:41	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 03:41	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 03:41	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/1/15 03:41	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/1/15 03:41	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/1/15 03:41	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/1/15 03:41	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 03:41	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/1/15 03:41	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 03:41	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 03:41	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 03:41	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 03:41	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 03:41	JPA	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		5/1/15 03:41	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 03:41	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/1/15 03:41	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/1/15 03:41	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 03:41	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/1/15 03:41	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/1/15 03:41	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/1/15 03:41	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/1/15 03:41	JPA	A

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ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894001** Date Collected: 4/29/2015 00:00 Matrix: Water

Sample ID: **TB-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/1/15 03:41	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/1/15 03:41	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 03:41	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/1/15 03:41	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/1/15 03:41	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 03:41	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/1/15 03:41	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/1/15 03:41	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/1/15 03:41	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 03:41	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/1/15 03:41	JPA	A
o-Xylene	ND	2	ug/L	1.0	0.33	SW846 8260C		5/1/15 03:41	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/1/15 03:41	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260C		5/1/15 03:41	JPA	A
4-Bromofluorobenzene (S)	93.6		%	79 - 114	SW846 8260C		5/1/15 03:41	JPA	A
Dibromofluoromethane (S)	95.3		%	78 - 116	SW846 8260C		5/1/15 03:41	JPA	A
Toluene-d8 (S)	94.4		%	76 - 127	SW846 8260C		5/1/15 03:41	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894002** Date Collected: 4/29/2015 11:00 Matrix: Water

Sample ID: **MRC-MW-80A-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES											
1,4-Dioxane	4.7		ug/L	0.070	0.014	EPA 522	5/4/15	JEK	5/5/15 18:22	CGS	C
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*		*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	78.6		%	70 - 130		EPA 522	5/4/15	JEK	5/5/15 18:22	CGS	C
METALS											
Antimony, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Arsenic, Total	ND		mg/L	0.0030	0.0010	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Barium, Total	0.028		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Beryllium, Total	0.00058J	J	mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 15:27	MO	A1
Cadmium, Total	ND		mg/L	0.0011	0.00037	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Chromium, Total	0.0020J	J	mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Cobalt, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Copper, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Iron, Total	0.023J	J	mg/L	0.067	0.022	SW846 6010C	5/4/15	AAM	5/4/15 12:21	SRT	A2
Lead, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Manganese, Total	0.014		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Mercury, Total	ND		mg/L	0.00050	0.00017	SW846 7470A	5/7/15	MNP	5/7/15 13:19	MNP	A3
Molybdenum, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Nickel, Total	0.0053J	J	mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Selenium, Total	ND		mg/L	0.0056	0.0019	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Silver, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Thallium, Total	ND		mg/L	0.0010	0.00030	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1
Vanadium, Total	ND		mg/L	0.0022	0.00074	SW846 6020A	4/30/15	AAM	4/30/15 13:22	MO	A1

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894003** Date Collected: 4/29/2015 12:49 Matrix: Water

Sample ID: **MRC-MW-80B-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/1/15 08:50	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 08:50	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 08:50	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 08:50	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/1/15 08:50	JPA	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260C		5/1/15 08:50	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/1/15 08:50	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 08:50	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 08:50	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/1/15 08:50	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/1/15 08:50	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 08:50	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/1/15 08:50	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 08:50	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 08:50	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/1/15 08:50	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/1/15 08:50	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/1/15 08:50	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/1/15 08:50	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 08:50	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 08:50	JPA	A
1,1-Dichloroethane	1.5		ug/L	1.0	0.28	SW846 8260C		5/1/15 08:50	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 08:50	JPA	A
1,1-Dichloroethene	24.9		ug/L	1.0	0.29	SW846 8260C		5/1/15 08:50	JPA	A
cis-1,2-Dichloroethene	2.4		ug/L	1.0	0.32	SW846 8260C		5/1/15 08:50	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 08:50	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 08:50	JPA	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		5/1/15 08:50	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 08:50	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/1/15 08:50	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/1/15 08:50	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 08:50	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/1/15 08:50	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/1/15 08:50	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/1/15 08:50	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/1/15 08:50	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894003** Date Collected: 4/29/2015 12:49 Matrix: Water

Sample ID: **MRC-MW-80B-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared	By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C			5/1/15 08:50	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C			5/1/15 08:50	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C			5/1/15 08:50	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C			5/1/15 08:50	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C			5/1/15 08:50	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C			5/1/15 08:50	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C			5/1/15 08:50	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C			5/1/15 08:50	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C			5/1/15 08:50	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C			5/1/15 08:50	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C			5/1/15 08:50	JPA	A
Trichloroethene	61.7		ug/L	1.0	0.33	SW846 8260C			5/1/15 08:50	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C			5/1/15 08:50	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C			5/1/15 08:50	JPA	A
o-Xylene	ND	2	ug/L	1.0	0.33	SW846 8260C			5/1/15 08:50	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C			5/1/15 08:50	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.7		%	62 - 133	SW846 8260C			5/1/15 08:50	JPA	A
4-Bromofluorobenzene (S)	99.1		%	79 - 114	SW846 8260C			5/1/15 08:50	JPA	A
Dibromofluoromethane (S)	91.7		%	78 - 116	SW846 8260C			5/1/15 08:50	JPA	A
Toluene-d8 (S)	94.1		%	76 - 127	SW846 8260C			5/1/15 08:50	JPA	A

SEMIVOLATILES

1,4-Dioxane	15.4		ug/L	0.070	0.014	EPA 522	5/4/15	JEK	5/5/15 18:47	CGS	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,4-Dioxane-d8 (S)	81		%	70 - 130	EPA 522	5/4/15	JEK	5/5/15 18:47	CGS	E

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894004** Date Collected: 4/29/2015 14:51 Matrix: Water

Sample ID: **MRC-MW-88B-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	3.1	SW846 8260C		5/1/15 09:07	JPA	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 09:07	JPA	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 09:07	JPA	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 09:07	JPA	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260C		5/1/15 09:07	JPA	A
Bromomethane	0.47J	J	ug/L	1.0	0.39	SW846 8260C		5/1/15 09:07	JPA	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260C		5/1/15 09:07	JPA	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 09:07	JPA	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 09:07	JPA	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260C		5/1/15 09:07	JPA	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260C		5/1/15 09:07	JPA	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260C		5/1/15 09:07	JPA	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260C		5/1/15 09:07	JPA	A
Cyclohexane	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 09:07	JPA	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260C		5/1/15 09:07	JPA	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260C		5/1/15 09:07	JPA	A
1,2-Dichlorobenzene	ND		ug/L	1.0	0.38	SW846 8260C		5/1/15 09:07	JPA	A
1,3-Dichlorobenzene	ND		ug/L	1.0	0.25	SW846 8260C		5/1/15 09:07	JPA	A
1,4-Dichlorobenzene	ND		ug/L	1.0	0.27	SW846 8260C		5/1/15 09:07	JPA	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260C		5/1/15 09:07	JPA	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 09:07	JPA	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 09:07	JPA	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260C		5/1/15 09:07	JPA	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 09:07	JPA	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 09:07	JPA	A
cis-1,3-Dichloropropene	ND	1	ug/L	1.0	0.31	SW846 8260C		5/1/15 09:07	JPA	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260C		5/1/15 09:07	JPA	A
1,4-Dioxane	ND		ug/L	320	58.9	SW846 8260C		5/1/15 09:07	JPA	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260C		5/1/15 09:07	JPA	A
Freon 113	ND		ug/L	1.0	0.26	SW846 8260C		5/1/15 09:07	JPA	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260C		5/1/15 09:07	JPA	A
Isopropylbenzene	ND		ug/L	1.0	0.22	SW846 8260C		5/1/15 09:07	JPA	A
Methyl acetate	ND		ug/L	2.0	0.32	SW846 8260C		5/1/15 09:07	JPA	A
Methyl cyclohexane	ND		ug/L	1.0	0.30	SW846 8260C		5/1/15 09:07	JPA	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2067894 TMM026|112IC06247

Lab ID: **2067894004** Date Collected: 4/29/2015 14:51 Matrix: Water

Sample ID: **MRC-MW-88B-042915** Date Received: 4/29/2015 20:13

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260C		5/1/15 09:07	JPA	A
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260C		5/1/15 09:07	JPA	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 09:07	JPA	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260C		5/1/15 09:07	JPA	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260C		5/1/15 09:07	JPA	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260C		5/1/15 09:07	JPA	A
1,2,3-Trichlorobenzene	ND		ug/L	2.0	0.93	SW846 8260C		5/1/15 09:07	JPA	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	0.82	SW846 8260C		5/1/15 09:07	JPA	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260C		5/1/15 09:07	JPA	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
Trichloroethene	1.2		ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
Trichlorofluoromethane	ND		ug/L	1.0	0.24	SW846 8260C		5/1/15 09:07	JPA	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260C		5/1/15 09:07	JPA	A
o-Xylene	ND	2	ug/L	1.0	0.33	SW846 8260C		5/1/15 09:07	JPA	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260C		5/1/15 09:07	JPA	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.6		%	62 - 133	SW846 8260C		5/1/15 09:07	JPA	A
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260C		5/1/15 09:07	JPA	A
Dibromofluoromethane (S)	93.7		%	78 - 116	SW846 8260C		5/1/15 09:07	JPA	A
Toluene-d8 (S)	93.2		%	76 - 127	SW846 8260C		5/1/15 09:07	JPA	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

Appendix C

Support Documentation

Tetra Tech, Inc.
MRC-GW 2015 Sampling

ALS-Middletown
Case Narrative
TMM-026

Sample Management

This report contains the results of the analysis of four (4) water samples collected on April 29, 2015. Analytical results and quality control information are summarized in this data package.

Sample Receipt

Samples arrived at ALS via courier on April 29, 2015. Upon receipt, the samples were inspected and compared to the Chain of Custody. Sample temperature was documented on the enclosed Chain of Custody. Samples were received intact and properly preserved, unless noted on the enclosed Certificate of Analysis and/or Chain of Custody.

Volatile Organics by SW-846 Method 8260

Sample Handling. Three (3) ground water samples were analyzed by SW-846 Method 8260 for volatile organic compounds. All analyses were performed within the holding time.

Initial Calibrations. Initial calibrations were properly analyzed and met method criteria for all target analytes. **Note:** The batch LCS also serves as a second source (ICV).

Continuing Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for all target analytes.

Blanks. Target analytes were not detected in the blank; except as follows:

- In 2171725, bromomethane was detected at 0.50J µg/L.

Surrogates. Recoveries were within control limits.

Laboratory control samples. Target analytes were recovered within control limits; except as follows:

- In 2171726, cis-1,3-dichloropropene and o-xylene were recovered below the control limits.

Internal Standards. All internal standard results met method criteria.

1,4-Dioxane by Method 522

Sample Handling. Two (2) water samples were extracted and analyzed by EPA Method 522 for 1,4-dioxane. All extractions and analyses were performed within the holding time.

Initial Calibrations. An initial calibration was properly analyzed and met method criteria for 1,4-dioxane.

Calibration Checks. Continuing calibration standards were properly analyzed and met method criteria for 1,4-dioxane.

Blanks. 1,4-dioxane was not detected in the method blank.

Surrogates. Surrogate recoveries were within control limits.

Blank Spikes. 1,4-dioxane was recovered within control limits in the blank spike.

Internal Standards. Internal standards met method criterial.

<u>Total Metals by SW-846 Method 6020A</u>

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the Agilent 7700x ICP-MS, using SW-846 Method 6020A. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks with the exception of the following:

- Mo had detectible levels in the CCBs analyzed at 11:39 and 13:36 at 0.0008 J mg/L.

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike/matrix spike dup was prepared on sample, 2067894, in this deliverable group. The spike recoveries and their associated RPDs were within method control limits.

<u>Total Metals by SW-846 Method 6010C</u>

Sample handling. One (1) water sample was digested by SW-846 Method 3015, and the digestate was analyzed for total metals on the ThermoFisher ICP6500_2, using SW-846 Method 6010C. The sample was digested and analyzed within the six-month holding time established for the method.

Calibration. All criteria associated with the calibration and calibration verification standards were within control limits

Blanks. Metals were not detected in the blanks, except the following;

- The j-flag on form 3b represents a detection greater than the MDL, but less than 2.2x the MDL. This value is within method control limits

Laboratory Control Samples. Recoveries were within the control limits.

Spikes. A matrix spike was not prepared from the sample in this deliverable group.

Total Mercury in Water by EPA Method 7470A

Sample handling. One (1) water sample was analyzed for total mercury using EPA method 7470A. The sample was digested and analyzed within the 28-day holding time established for the method.

Calibration. All criteria associated with the calibration and check standards were within control limits.

Blanks. Mercury was not detected in the method blank.

Laboratory Control Sample. The laboratory control sample was recovered within the control limits of 85-115%.

Spikes. A matrix spike/matrix spike duplicate was not performed on samples in this deliverable group.

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 0505 DSM | PA

2067894

PROJECT NO: 112C06247	FACILITY: MRC GW 2015	PROJECT MANAGER Tony Aparnavage	PHONE NUMBER 301 528-3021	LABORATORY NAME AND ADDRESS AL
SAMPLERS (SIGNATURE) Walt Pa		FIELD OPERATIONS LEADER Walt Payor	PHONE NUMBER 301 991-3914	
		CARRIER/WAYBILL NUMBER		CITY, STATE

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)									
									G	P	G							
									PRESERVATIVE USED			HCl	HNO3	Na2S2O3				
									TYPE OF ANALYSIS	VOCs	Total metals	1,4 Dioxane						COMMENTS
4-29	—	TB-042915	TB	—	—	QC	G	3		X								
	1100	MRC-MW-80A-042915	80A	—	—	GW				X	X2							
	1249	MRC-MW-80B-042915	80B	—	—					X	X2							
	1451	MRC-MW-88B-042915	88B	—	—			3		X								
		L7 times from bottles LMG 04/30/15																

Y N Initials Cooler Temp: 1 °C
Custody Seals Present? LMG
(if present) Seals Intact?
Received on Ice?
COC/Lbls Complete
Cont in Good Cond?
Correct Containers?
Correct Samp Vol?
Correct Preservation?
Headspace/Volatiles?
Tracking #:
Cooler #:
Therm ID: 291
Ship Carrier:
FedEx UPS
DHL

1. RELINQUISHED BY Walt Pa	DATE 4-29-15	TIME	1. RECEIVED BY /AB	DATE 4/29/15	TIME 1537
2. RELINQUISHED BY	DATE 4/29/15	TIME	2. RECEIVED BY	DATE 4/29	TIME 1615
3. RELINQUISHED BY	DATE 4/29	TIME 2013	3. RECEIVED BY SGS	DATE 4/29	TIME 2013

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TtNUS-001

LMG 04/30/15 0312

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-026

Lab File ID: 15042850.D BFB Injection Date: 4/28/2015

Instrument ID: ms15.i BFB Injection Time: 23:20

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	76.6
175	5.0 - 9.0% of mass 174	5.3 (6.9) 1
176	95.0 - 101.0% of mass 174	73.9 (96.4) 1
177	5.0 - 9.0% of mass 176	4.6 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTD00.5	VSTD00.5	15042853.D	4/29/2015	00:14
1234	1234	15042854.D	4/29/2015	00:31
1235	1235	15042855.D	4/29/2015	00:48
1236	1236	15042856.D	4/29/2015	01:05
1237	1237	15042857.D	4/29/2015	01:22
1238	1238	15042858.D	4/29/2015	01:39
1239	1239	15042859.D	4/29/2015	01:57
2170307(LCS)	2170307	15042864.D	4/29/2015	03:22

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Acetone	763825			Q	0.000000	0.027020	-0.000090	0.99998
Acrolein	0.05281	0.06678		A		0.058130		8.00928
Acrylonitrile	0.10516	0.11068		A		0.108620		2.15863
Acetonitrile	1037800			Q	0.000000	0.036540	-0.000110	0.99991
tert-Amyl Ethylether	3900569	5695		Q	0.000000	0.539780	0.011850	0.99947
tert-Amyl methyl ether	4964603	6024		Q	0.000000	0.717180	0.010520	0.99961
tert-Amyl Alcohol	592756	777		Q	0.000000	0.014720	0.000120	0.99978
Benzene	1.31409	1.65197		A		1.425780		7.39532
Benzyl Chloride				Q	0.000000	0.117070	0.032850	0.99976
Bromobenzene	0.95899	0.96096		A		0.960870		2.84433
Bromochloromethane	1006470	2542		Q	0.000000	0.190590	-0.004670	0.99989
Bromodichloromethane	0.44902	0.47594		A		0.439940		5.20183
Bromoform *	1346656	1213		Q	0.000000	0.433410	0.011220	0.99973
Bromomethane	1065452			Q	0.000000	0.198870	-0.004480	0.99950
2-Butanone	1266819			Q	0.000000	0.040740	-0.000020	0.99984
tert.- Butyl Alcohol	0.02565			A		0.025540		6.45161
tert-Butylbenzene	1973375	1921		Q	0.000000	0.785570	-0.006130	0.99965
n-Butylbenzene	2084456			Q	0.000000	0.827650	-0.006090	0.99946
sec-Butylbenzene	10194963	7836		Q	0.000000	4.132580	-0.042780	0.99970
Carbon Disulfide	5325232	11656		Q	0.000000	0.908800	-0.009670	0.99966
Carbon Tetrachloride	0.41649	0.47500		A		0.429670		5.55680
Chloroacetonitrile	321198			Q	0.000000	0.020930	0.000080	0.99967
Chlorobenzene *	2.28058	2.89370		A		2.387700		9.81289
1-Chlorobutane	2004831	4675		Q	0.000000	0.370630	-0.007940	0.99984
Chlorodibromomethane	2249932	2788		Q	0.000000	0.696440	0.019920	0.99986
Chloroethane	1309180			Q	0.000000	0.282870	-0.011300	0.99963
2-Chloroethylvinyl ether	318972			Q	0.000000	0.020030	0.004600	0.99859
Chloroform **	3791843	19276		Q	0.000000	0.682630	-0.012360	0.99993
1-Chlorohexane	2805981	2938		Q	0.000000	0.925580	0.016480	0.99949
Chloromethane *	2255563			Q	0.000000	0.402250	-0.006740	0.99979
Chloroprene	0.45985	0.56865		A		0.487620		8.20179
3-Chloro-1-propene	1986844	6409		Q	0.000000	0.419010	-0.015640	0.99987
o-Chlorotoluene	7898524	8143		Q	0.000000	3.104490	-0.018630	0.99977
p-Chlorotoluene	7354920	7063		Q	0.000000	2.888950	-0.017140	0.99979
Cyclohexane	0.46067	0.47079		A		0.454440		6.83492
1,2-Dibromo-3-Chloropropane	389492	369		Q	0.000000	0.128150	0.002830	0.99974

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
Iodomethane	639521	256		Q	0.000000	0.046800	0.008280	0.99479
Isobutyl alcohol	577145	214		Q	0.000000	0.007450	0.000030	0.99983
Isopropyl Alcohol	533140			Q	0.000000	0.017200	9.201000	0.99986
Isopropylbenzene	9952456	9302		Q	0.000000	3.826080	-0.010240	0.99953
p-Isopropyltoluene	2331785	1403		Q	0.000000	0.917590	-0.005580	0.99954
Methyl acetate	319421	834		Q	0.000000	0.054860	-0.000640	0.99990
Methyl acrylate	0.27309	0.25579		A		0.252940		7.42840
Methacrylonitrile	842261	1192		Q	0.000000	0.139960	-0.000980	0.99987
Methyl cyclohexane	1.15546	1.11170		A		1.101960		5.48263
Methyl methacrylate	1605255	2152		Q	0.000000	0.224930	0.004490	0.99917
Methyl t-Butyl Ether	0.78990	1.05413		A		0.844920		11.85174
4-Methyl-2-Pentanone(MIBK)	9175944	9231		Q	0.000000	0.646740	0.000890	0.99988
Methylene Chloride	2060507	12726		Q	0.017340	0.370280	-0.007020	0.99996
Naphthalene	6771758	3793		Q	0.000000	2.148480	0.061800	0.99872
Nitrobenzene	1536688	827		Q	0.000000	0.025580	0.000490	0.99936
2-Nitropropane		2625		Q	0.000000	0.132900	0.001840	0.99971
Octane	1082146	878		Q	0.000000	0.388240	0.001660	0.99938
Pentachloroethane	0.67284	0.75609		A		0.699690		4.30308
Pentane	1172990			Q	0.000000	0.236710	-0.007650	0.99996
n-Propanol	1297284			Q	0.000000	0.025110	-0.000070	0.99996
Propionitrile	0.04216	0.04319		A		0.043560		2.37666
n-Propylbenzene	2771637	2448		Q	0.000000	1.107150	-0.009190	0.99973
Styrene	6765147	5855		Q	0.000000	2.579900	-0.003980	0.99967
1,1,1,2-Tetrachloroethane	0.79918	1.03449		A		0.805450		13.09682
1,1,2,2-Tetrachloroethane *	2401297	4044		Q	0.000000	0.966700	-0.009380	0.99998
Tetrachloroethene	1806301	3977		Q	0.000000	0.698270	-0.004980	0.99999
Tetrahydrofuran	2635656			Q	0.000000	0.082890	0.000020	0.99973
Toluene **	5315051	7991		Q	0.000000	1.934050	0.003760	0.99986
Total Xylenes	12075957	13273		Q	0.000000	1.413580	0.003540	0.99971
1,2,3-Trichlorobenzene	2713254	2708		Q	0.000000	0.989860	0.005100	0.99967
1,2,4-Trichlorobenzene	3127929	3447		Q	0.000000	1.096860	0.012680	0.99936
1,1,1-Trichloroethane	0.47704	0.60402		A		0.515600		7.96741
1,1,2-Trichloroethane	1627786	3171		Q	0.000000	0.582040	0.002580	0.99999
Trichloroethene	2126775	5188		Q	0.000000	0.373460	-0.005490	0.99989
Trichlorofluoromethane	3223042			Q	0.000000	0.616090	-0.015870	0.99991
1,2,3-Trichloropropane	751603	1179		Q	0.000000	0.304050	-0.003140	1.00000

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2,4-Trimethylbenzene	8579613	6026		Q	0.000000	3.421710	-0.027650	0.99974
1,3,5-Trimethylbenzene	8344627	6728		Q	0.000000	3.356220	-0.031280	0.99981
Vinyl Acetate	450658	561		Q	0.000000	0.068320	0.000470	0.99979
Vinyl Chloride **	2289978			Q	0.000000	0.426850	-0.009570	0.99967
o-Xylene	3989939	4052		Q	0.000000	1.327400	0.021750	0.99942
mp-Xylene	8086018	9221		Q	0.000000	1.456670	0.002530	0.99981
4-Bromofluorobenzene		3700		Q	0.000000	0.738960	0.024160	0.99978
Dibromofluoromethane				Q	0.000000	0.309800	-0.001260	0.99990
1,2-Dichloroethane-d4	1998955			Q	0.000000	0.359030	-0.006420	0.99994
Toluene-d8				A		2.419200		10.88512

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.
SPCC Compounds (*) with required minimum RRF.
CCC Compounds (**) with required maximum %RSD.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-026

Lab File ID: 15050100.D BFB Injection Date: 5/1/2015

Instrument ID: ms15.i BFB Injection Time: 00:18

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.2
75	30.0 - 60.0% of mass 95	49.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.6(0.7) 1
174	50.0 - 100.0% of mass 95	82.1
175	5.0 - 9.0% of mass 174	5.6 (6.8) 1
176	95.0 - 101.0% of mass 174	78.6 (95.8) 1
177	5.0 - 9.0% of mass 176	4.9 (6.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1800	1800	15050102.D	5/1/2015	00:54
2171725(MB)	2171725	15050105A.D	5/1/2015	01:59
2171726(LCS)	2171726	15050106A.D	5/1/2015	02:16
TB-042915	2067894001	15050111.D	5/1/2015	03:41
MRC-MW-80B-042915	2067894003	15050129.D	5/1/2015	08:50
MRC-MW-88B-042915	2067894004	15050130.D	5/1/2015	09:07

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date/Time: 5/1/2015 00:54

Lab File ID: 15050102.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Acetone	250		221		-11.7	100.0	Q
Acrolein	0.0581	0.0501			-13.8	100.0	A
Acrylonitrile	0.1086	0.0932			-14.2	100.0	A
Acetonitrile	250		231		-7.8	100.0	Q
tert-Amyl Ethylether	50.0000		36.7384		-26.5	100.0	Q
tert-Amyl methyl ether	50.0000		37.5932		-24.8	100.0	Q
tert-Amyl Alcohol	250		182		-27.1	100.0	Q
Benzene	1.4258	1.2296			-13.8	100.0	A
Benzyl Chloride	50.0000		44.1141		-11.8	100.0	Q
Bromobenzene	0.9609	0.8849			-7.9	100.0	A
Bromochloromethane	50.0000		43.0170		-14.0	100.0	Q
Bromodichloromethane	0.4399	0.3810			-13.4	100.0	A
Bromoform	50.0000		41.0173	0.100	-18.0	100.0	Q
Bromomethane	50.0000		50.7393		1.5	100.0	Q
2-Butanone	250		209		-16.5	100.0	Q
tert.- Butyl Alcohol	0.0255	0.0194			-24.2	100.0	A
tert-Butylbenzene	50.0000		43.5447		-12.9	100.0	Q
n-Butylbenzene	50.0000		43.3662		-13.3	100.0	Q
sec-Butylbenzene	50.0000		43.9730		-12.1	100.0	Q
Carbon Disulfide	50.0000		40.4960		-19.0	100.0	Q
Carbon Tetrachloride	0.4297	0.3648			-15.1	100.0	A
Chloroacetonitrile	250		218		-12.9	100.0	Q
Chlorobenzene	2.3877	2.0397		0.300	-14.6	100.0	A
1-Chlorobutane	50.0000		43.1651		-13.7	100.0	Q
Chlorodibromomethane	50.0000		42.9298		-14.1	100.0	Q
Chloroethane	50.0000		44.6075		-10.8	100.0	Q
2-Chloroethylvinyl ether	50.0000		25.8560		-48.3	100.0	Q
Chloroform	50.0000		43.4841		-13.0	20.0	Q
1-Chlorohexane	50.0000		42.4936		-15.0	100.0	Q
Chloromethane	50.0000		48.8093	0.100	-2.4	100.0	Q
Chloroprene	0.4876	0.4125			-15.4	100.0	A
3-Chloro-1-propene	50.0000		42.2995		-15.4	100.0	Q
o-Chlorotoluene	50.0000		43.9474		-12.1	100.0	Q
p-Chlorotoluene	50.0000		44.0662		-11.9	100.0	Q
Cyclohexane	0.4544	0.4203			-7.5	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date/Time: 5/1/2015 00:54

Lab File ID: 15050102.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
1,2-Dibromo-3-Chloropropane	50.0000		42.1067		-15.8	100.0	Q
1,2-Dibromoethane	0.6562	0.5574			-15.1	100.0	A
Dibromomethane	0.2114	0.1764			-16.6	100.0	A
trans-1,4-Dichloro-2-butene	0.2280	0.2083			-8.6	100.0	A
1,2-Dichlorobenzene	1.7893	1.5915			-11.1	100.0	A
1,3-Dichlorobenzene	1.8566	1.6658			-10.3	100.0	A
1,4-Dichlorobenzene	1.9931	1.7247			-13.5	100.0	A
Dichlorodifluoromethane	50.0000		45.9227		-8.2	100.0	Q
1,1-Dichloroethane	50.0000		44.0934	0.100	-11.8	100.0	Q
1,2-Dichloroethene, Total	100		85.1570		-14.8	100.0	Q
1,2-Dichloroethane	50.0000		44.2389		-11.5	100.0	Q
1,1-Dichloroethene	50.0000		43.6773		-12.6	20.0	Q
cis-1,2-Dichloroethene	0.4641	0.3826			-17.6	100.0	A
trans-1,2-Dichloroethene	50.0000		43.9322		-12.1	100.0	Q
Dichlorofluoromethane	50.0000		45.0448		-9.9	100.0	Q
1,1-Dichloro-2-Propanone	250		205		-18.1	100.0	Q
2,2-Dichloropropane	0.3930	0.3227			-17.9	100.0	A
1,3-Dichloropropane	50.0000		43.8963		-12.2	100.0	Q
1,2-Dichloropropane	0.3530	0.3032			-14.1	20.0	A
1,1-Dichloropropene	0.4527	0.4040			-10.8	100.0	A
cis-1,3-Dichloropropene	50.0000		42.3783		-15.2	100.0	Q
trans-1,3-Dichloropropene	50.0000		42.5456		-14.9	100.0	Q
1,3-Dichloropropene, Total	100		84.9239		-15.1	100.0	Q
Diisobutylene	50.0000		43.3742		-13.3	100.0	Q
Diisopropyl ether	50.0000		42.7696		-14.5	100.0	Q
1,4-Dioxane	1250		1008		-19.3	100.0	Q
Ethyl Acetate	0.2675	0.2224			-16.8	100.0	A
Ethyl ether	50.0000		43.1769		-13.6	100.0	Q
Ethyl Methacrylate	50.0000		41.7070		-16.6	100.0	Q
Ethyl tert-butyl ether	0.8344	0.6626			-20.6	100.0	A
Ethylbenzene	50.0000		44.2966		-11.4	20.0	Q
Freon 113	50.0000		44.4115		-11.2	100.0	Q
Heptane	50.0000		44.3604		-11.3	100.0	Q
Hexachlorobutadiene	50.0000		43.7181		-12.6	100.0	Q
Hexachloroethane	50.0000		42.8947		-14.2	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date/Time: 5/1/2015 00:54

Lab File ID: 15050102.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Hexane	50.0000		44.3362		-11.3	100.0	Q
2-Hexanone	250		215		-14.2	100.0	Q
Iodomethane	50.0000		65.8908		31.8	100.0	Q
Isobutyl alcohol	500		412		-17.5	100.0	Q
Isopropyl Alcohol	250		210		-16.1	100.0	Q
Isopropylbenzene	50.0000		42.8259		-14.3	100.0	Q
p-Isopropyltoluene	50.0000		43.2956		-13.4	100.0	Q
Methyl acetate	50.0000		44.1932		-11.6	100.0	Q
Methyl acrylate	0.2529	0.2179			-13.9	100.0	A
Methacrylonitrile	50.0000		43.5052		-13.0	100.0	Q
Methyl cyclohexane	1.1020	1.0239			-7.1	100.0	A
Methyl methacrylate	50.0000		39.4263		-21.1	100.0	Q
Methyl t-Butyl Ether	0.8449	0.6462			-23.5	100.0	A
4-Methyl-2-Pentanone(MIBK)	250		219		-12.4	100.0	Q
Methylene Chloride	50.0000		44.1553		-11.7	100.0	Q
Naphthalene	50.0000		39.0172		-22.0	100.0	Q
Nitrobenzene	500		363		-27.4	100.0	Q
2-Nitropropane	250		220		-12.0	100.0	Q
Octane	50.0000		45.1479		-9.7	100.0	Q
Pentachloroethane	0.6997	0.6212			-11.2	100.0	A
Pentane	50.0000		45.4840		-9.0	100.0	Q
n-Propanol	500		463		-7.5	100.0	Q
Propionitrile	0.0436	0.0374			-14.2	100.0	A
n-Propylbenzene	50.0000		43.9298		-12.1	100.0	Q
Styrene	50.0000		43.2301		-13.5	100.0	Q
1,1,1,2-Tetrachloroethane	0.8055	0.6729			-16.5	100.0	A
1,1,2,2-Tetrachloroethane	50.0000		44.6634	0.300	-10.7	100.0	Q
Tetrachloroethene	50.0000		44.4243		-11.2	100.0	Q
Tetrahydrofuran	250		209		-16.5	100.0	Q
Toluene	50.0000		43.9467		-12.1	20.0	Q
Total Xylenes	150		130		-13.1	100.0	Q
1,2,3-Trichlorobenzene	50.0000		41.8363		-16.3	100.0	Q
1,2,4-Trichlorobenzene	50.0000		40.9378		-18.1	100.0	Q
1,1,1-Trichloroethane	0.5156	0.4302			-16.6	100.0	A
1,1,2-Trichloroethane	50.0000		45.0202		-10.0	100.0	Q

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

Form VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date/Time: 5/1/2015 00:54

Lab File ID: 15050102.D Init. Calib. Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Init. Calib. Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

COMPOUND	RRF	RRF050	Conc. CC std	MIN RRF	%D	MAX%D	CT
Trichloroethene	50.0000		43.0695		-13.9	100.0	Q
Trichlorofluoromethane	50.0000		44.4633		-11.1	100.0	Q
1,2,3-Trichloropropane	50.0000		44.3143		-11.4	100.0	Q
1,2,4-Trimethylbenzene	50.0000		44.0584		-11.9	100.0	Q
1,3,5-Trimethylbenzene	50.0000		44.7133		-10.6	100.0	Q
Vinyl Acetate	50.0000		41.4739		-17.1	100.0	Q
Vinyl Chloride	50.0000		43.0890		-13.8	20.0	Q
o-Xylene	50.0000		41.5150		-17.0	100.0	L
mp-Xylene	100		88.7717		-11.2	100.0	Q
4-Bromofluorobenzene	50.0000		43.5671		-12.9	100.0	Q
Dibromofluoromethane	50.0000		42.0711		-15.9	100.0	Q
1,2-Dichloroethane-d4	50.0000		41.7353		-16.5	100.0	Q
Toluene-d8	2.4192	2.0615			-14.8	100.0	A

Calibration Type: A=Average Response Factor, L=Linear Regression, Q=Quadratic Regression
Compounds with "Calibration Type" other than "A" are calculated as % Drift due to alternate calibration type.

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

2171725

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG NO.: TMM-026

Lab File ID: 15050105A.D Lab Sample ID: 2171725

Date Analyzed: 5/1/2015 Time Analyzed: 01:59

GC Column: RTXVMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: ms15.i

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
2171726(LCS)	2171726	15050106A.D	02:16
TB-042915	2067894001	15050111.D	03:41
MRC-MW-80B-042915	2067894003	15050129.D	08:50
MRC-MW-88B-042915	2067894004	15050130.D	09:07

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2171725(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Matrix (soil/water): WATER Lab Sample ID: 2171725

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050105A.D

Level (low/med): Date Received: 5/1/15

% Moisture: not dec. 100.0 Date Analyzed: 5/1/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	0.50	J
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2171725(MB)

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Matrix (soil/water): WATER Lab Sample ID: 2171725

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050105A.D

Level (low/med): Date Received: 5/1/15

% Moisture: not dec. 100.0 Date Analyzed: 5/1/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	Methyl t-Butyl Ether	1.0	U
108-10-1	4-Methyl-2-Pentanone(MIBK)	5.0	U
75-09-2	Methylene Chloride	1.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	2.0	U
120-82-1	1,2,4-Trichlorobenzene	2.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
95-47-6	o-Xylene	1.0	U
108383/106423	mp-Xylene	2.0	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA CASE No.: SAS No.: SDG NO.: TMM-026

	Sample NO.	SMC1 (BFB) #	SMC2 (DBFM)	SMC3 (DCE) #	SMC4 (TOL) #	TOT OUT
02	2171725(MB)	96.1	93.1	98.8	94.7	0
03	2171726(LCS)	88.9	84.4	85.2	83.0	0
04	TB-042915	93.6	95.3	101	94.4	0
05	MRC-MW-80B-042915	99.1	91.7	96.7	94.1	0
06	MRC-MW-88B-042915	92.5	93.7	98.6	93.2	0

	QC LIMITS
SMC1 (BFB) = 4-Bromofluorobenzene	(79-114)
SMC2 (DBFM) = Dibromofluoromethane	(78-116)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(62-133)
SMC4 (TOL) = Toluene-d8	(76-127)

Column to be used to flag recovery values

* Values outside of contract required QC Limits

D Surrogate Diluted Out

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		99.6	99.6	(40-151)
Benzene	20.0		19.4	97.1	(80-124)
Bromochloromethane	20.0		19.2	96	(73-117)
Bromodichloromethane	20.0		18.5	92.7	(79-126)
Bromoform	20.0		17.5	87.3	(70-123)
Bromomethane	20.0		19.2	96	(45-148)
2-Butanone	100		93.3	93.3	(50-152)
Carbon Disulfide	20.0		16.7	83.5	(57-131)
Carbon Tetrachloride	20.0		19.6	98.2	(62-132)
Chlorobenzene	20.0		18.2	91.1	(85-117)
Chlorodibromomethane	20.0		18.0	90.1	(77-122)
Chloroethane	20.0		18.5	92.6	(51-142)
Chloroform	20.0		20.2	101	(78-122)
Chloromethane	20.0		21.9	110	(38-156)
Cyclohexane	20.0		20.4	102	(66-130)
1,2-Dibromo-3-Chloropro	20.0		17.9	89.6	(59-133)
1,2-Dibromoethane	20.0		18.2	90.9	(80-124)
1,2-Dichlorobenzene	20.0		18.9	94.3	(82-118)
1,3-Dichlorobenzene	20.0		19.5	97.4	(81-118)
1,4-Dichlorobenzene	20.0		19.0	95	(81-116)
Dichlorodifluoromethane	20.0		20.1	100	(17-166)
1,1-Dichloroethane	20.0		19.7	98.6	(78-124)
1,2-Dichloroethane	20.0		19.8	98.9	(70-133)
1,1-Dichloroethene	20.0		19.0	95	(63-128)
cis-1,2-Dichloroethene	20.0		19.0	94.8	(78-125)
trans-1,2-Dichloroethen	20.0		20.5	103	(71-122)
1,2-Dichloropropane	20.0		18.9	94.6	(81-127)
cis-1,3-Dichloropropene	20.0		17.7	88.4	(81-121)
trans-1,3-Dichloroprope	20.0		18.1	90.6	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Laboratory Control Spike - Sample No: 2170307

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		431	86.3	(1-280)
Ethylbenzene	20.0		18.4	91.8	(80-124)
Freon 113	20.0		19.1	95.5	(50-130)
2-Hexanone	100		85.3	85.3	(65-154)
Isopropylbenzene	20.0		17.1	85.6	(73-129)
Methyl acetate	20.0		20.5	103	(70-130)
Methyl cyclohexane	20.0		18.8	94.1	(70-130)
Methyl t-Butyl Ether	20.0		18.2	91.2	(69-115)
4-Methyl-2-Pentanone(MI	100		88.3	88.3	(71-146)
Methylene Chloride	20.0		20.1	101	(76-121)
Styrene	20.0		18.0	89.9	(79-123)
1,1,2,2-Tetrachloroetha	20.0		19.6	98.2	(74-135)
Tetrachloroethene	20.0		19.3	96.4	(72-124)
Toluene	20.0		18.8	94.1	(80-125)
1,2,3-Trichlorobenzene	20.0		16.3	81.7	(61-126)
1,2,4-Trichlorobenzene	20.0		16.0	79.9	(67-123)
1,1,1-Trichloroethane	20.0		19.0	94.9	(66-130)
1,1,2-Trichloroethane	20.0		19.4	97.1	(82-126)
Trichloroethene	20.0		19.6	98.1	(77-124)
Trichlorofluoromethane	20.0		19.3	96.5	(38-123)
Vinyl Chloride	20.0		19.4	97.1	(27-138)
o-Xylene	20.0		17.1	85.5	(79-124)
mp-Xylene	40.0		36.3	90.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Laboratory Control Spike - Sample No: 2171726

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
Acetone	100		89.9	89.9	(40-151)
Benzene	20.0		17.4	86.8	(80-124)
Bromochloromethane	20.0		16.9	84.4	(73-117)
Bromodichloromethane	20.0		16.4	81.8	(79-126)
Bromoform	20.0		15.2	76	(70-123)
Bromomethane	20.0		21.6	108	(45-148)
2-Butanone	100		78.9	78.9	(50-152)
Carbon Disulfide	20.0		14.7	73.6	(57-131)
Carbon Tetrachloride	20.0		16.6	83	(62-132)
Chlorobenzene	20.0		17.2	85.9	(85-117)
Chlorodibromomethane	20.0		15.7	78.7	(77-122)
Chloroethane	20.0		18.2	91.2	(51-142)
Chloroform	20.0		18.1	90.6	(78-122)
Chloromethane	20.0		22.2	111	(38-156)
Cyclohexane	20.0		18.1	90.7	(66-130)
1,2-Dibromo-3-Chloropro	20.0		15.4	76.9	(59-133)
1,2-Dibromoethane	20.0		16.2	80.8	(80-124)
1,2-Dichlorobenzene	20.0		17.9	89.5	(82-118)
1,3-Dichlorobenzene	20.0		18.6	93	(81-118)
1,4-Dichlorobenzene	20.0		18.0	89.8	(81-116)
Dichlorodifluoromethane	20.0		17.9	89.6	(17-166)
1,1-Dichloroethane	20.0		17.9	89.3	(78-124)
1,2-Dichloroethane	20.0		18.0	89.9	(70-133)
1,1-Dichloroethene	20.0		18.0	90.2	(63-128)
cis-1,2-Dichloroethene	20.0		16.6	83.2	(78-125)
trans-1,2-Dichloroethen	20.0		18.9	94.4	(71-122)
1,2-Dichloropropane	20.0		17.1	85.6	(81-127)
cis-1,3-Dichloropropene	20.0		15.4	76.9*	(81-121)
trans-1,3-Dichloroprope	20.0		15.8	78.8	(78-126)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

3A

WATER VOLATILE LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Laboratory Control Spike - Sample No: 2171726

COMPOUND	SPIKE ADDED (ug/L)		LCS CONCENTRATION (ug/L)	LCS % REC#	QC LIMIT REC
1,4-Dioxane	500		341	68.3	(1-280)
Ethylbenzene	20.0		17.0	85	(80-124)
Freon 113	20.0		18.5	92.5	(50-130)
2-Hexanone	100		76.4	76.4	(65-154)
Isopropylbenzene	20.0		15.7	78.7	(73-129)
Methyl acetate	20.0		18.0	89.8	(70-130)
Methyl cyclohexane	20.0		17.6	88.2	(70-130)
Methyl t-Butyl Ether	20.0		15.5	77.7	(69-115)
4-Methyl-2-Pentanone(MI	100		78.0	78	(71-146)
Methylene Chloride	20.0		17.7	88.7	(76-121)
Styrene	20.0		16.6	83	(79-123)
1,1,2,2-Tetrachloroetha	20.0		18.8	93.9	(74-135)
Tetrachloroethene	20.0		18.1	90.3	(72-124)
Toluene	20.0		17.3	86.3	(80-125)
1,2,3-Trichlorobenzene	20.0		14.5	72.7	(61-126)
1,2,4-Trichlorobenzene	20.0		13.7	68.5	(67-123)
1,1,1-Trichloroethane	20.0		16.8	84	(66-130)
1,1,2-Trichloroethane	20.0		17.9	89.5	(82-126)
Trichloroethene	20.0		17.5	87.5	(77-124)
Trichlorofluoromethane	20.0		18.2	90.8	(38-123)
Vinyl Chloride	20.0		17.9	89.5	(27-138)
o-Xylene	20.0		15.6	77.8*	(79-124)
mp-Xylene	40.0		33.1	82.7	(79-125)

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 52 outside limits

Comments:

Form III VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Lab File ID: 15042857.D Date Analyzed: 4/29/2015

Instrument ID: ms15.i Time Analyzed: 01:22

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	376070	5.912	345432	7.686	831532	3.910
UPPER LIMIT	752140	6.412	690864	8.186	1663064	4.410
LOWER LIMIT	188035	5.412	172716	7.186	415766	3.410
SAMPLE NO.						
2170307(LCS)	359952	5.912	322443	7.686	772758	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Lab File ID: 15050102.D Date Analyzed: 5/1/2015

Instrument ID: ms15.i Time Analyzed: 00:54

GC Column: RTXVMS ID: 0.2 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT#	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	380245	5.912	352351	7.686	852285	3.910
UPPER LIMIT	760490	6.412	704702	8.186	1704570	4.410
LOWER LIMIT	190123	5.412	176176	7.186	426143	3.410
SAMPLE NO.						
1800	380245	5.912	352351	7.686	852285	3.910
2171725(MB)	250413	5.913	183267	7.686	672120	3.910
2171726(LCS)	357545	5.913	310713	7.686	795087	3.910
TB-042915	240361	5.912	178560	7.686	641701	3.910
MRC-MW-80B-042915	257531	5.913	210953	7.686	672056	3.910
MRC-MW-88B-042915	255697	5.913	194876	7.686	660759	3.910

IS1 = Chlorobenzene-d5
IS2 = 1,4-Dichlorobenzene-d4
IS3 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form VIII VOA-1

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Lab File ID: 12081301 DFTPP Injection Date: 08/13/14

Instrument ID: MS12 DFTPP Injection Time: 1534

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.5
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	Greater than 50.0% of mass 95	62.3
175	5.0 - 9.0% of mass 174	4.9 (7.9)1
176	95.0 - 101.0% of mass 174	59.2 (95.1)1
177	5.0 - 9.0% of mass 176	4.2 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	1234	1234	12081303	08/13/14	1643
02	1235	1235	12081304	08/13/14	1713
03	1236	1236	12081305	08/13/14	1742
04	1237	1237	12081306	08/13/14	1814
05	1238	1238	12081307	08/13/14	1845
06	1239	1239	12081308	08/13/14	1918
07	1240	1240	12081309	08/13/14	1950
08	1241	1241	12081310	08/13/14	2018
09	1242	1242	12081311	08/13/14	2046
10	2ND-0.1	2ND-0.1	12081312	08/13/14	2119
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Instrument ID: MS12 Calibration Date(s): 08/13/14 08/13/14

Column: ZB-625 ID: 0.25 (mm) Calibration Time(s): 1643 2046

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	WLINR	-0.0000000	0.78373624	0.9995378	0.9900000
1,4-Dioxane-d8	AVRG		0.71178329	0.828	30.000

FORM VI SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 0921

Lab File ID: 12050501 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.28e-003	3.5e-003	1.3620085	0.00001	-6.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6280914	0.6280914	0.00001	-11.78	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 0921

Lab File ID: 12050501 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF5e-002 or AMOUNT	CCAL RRF5e-002	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	3.28e-003	3.5e-003	1.3620085	0.00001	-6.28	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6280914	0.6280914	0.00001	-11.78	30.00	AVRG

FORM VII SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Instrument ID: MS12 Calibration Date: 05/05/15 Time: 1522

Lab File ID: 12050515 Init. Calib. Date(s): 08/13/14 08/13/14

Init. Calib. Times: 1643 2046

GC Column: ZB-625 ID: 0.25 (mm)

COMPOUND	RRF or AMOUNT	RRF0.5000 or AMOUNT	CCAL RRF0.5000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,4-Dioxane	4.63e-002	5.e-002	1.3774356	0.00001	-7.40	30.00	WLNR
1,4-Dioxane-d8	0.7120000	0.6411731	0.6411731	0.00001	-9.95	30.00	AVRG

FORM VII SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

	SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	2172660	81								0
02	2172661LCSLO	83								0
03	MRC-MW-80A-0	79								0
04	MRC-MW-80B-0	81								0
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
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19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 = 1,4-Dioxane-d8	(70-130)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Matrix Spike - Sample No.: 2ND-0.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	2.00000	0.00	1.75631	88	80-120

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Matrix Spike - Sample No.: 2172661LCSLOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	#	QC. LIMITS REC.
1,4-Dioxane	7.e-002	0.00	0.0666911	95		50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____ZB-625_____

FORM III SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Lab File ID: 12050502 Lab Sample ID: 2172660

Instrument ID: MS12 Date Extracted: 05/04/15

Matrix: (soil/water) WATER Date Analyzed: 05/05/15

Level:(low/med) LOW Time Analyzed: 0946

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	2172661LCSLO	2172661	12050503	05/05/15
02	MRC-MW-80A-0	2067894002	12050522	05/05/15
03	MRC-MW-80B-0	2067894003	12050523	05/05/15
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
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27				
28				
29				
30				

COMMENTS:

FORM 1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

2172660

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

Matrix: (soil/water) WATER Lab Sample ID: 2172660

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 12050502

Level: (low/med) LOW Date Received: 05/04/15

% Moisture: _____ Decanted: (Y/N)___ Date Extracted: 05/04/15

Concentrated Extract Volume: 2000(uL) Date Analyzed: 05/05/15

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
123-91-1	1,4-Dioxane	0.070	U

FORM I SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

EPA Sample No. (SSTD050##): 1800 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050501 Time Analyzed: 0921

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	45530	6.36				
UPPER LIMIT	59189	6.86				
LOWER LIMIT	31871	5.86				
SAMPLE NO.						
01	2172660	51731	6.36				
02	2172661LCSLO	51274	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

EPA Sample No. (SSTD050##): MIDCHECK-5 Date Analyzed: 05/05/15

Lab File ID (Standard): 12050515 Time Analyzed: 1522

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49202	6.36				
	UPPER LIMIT	63963	6.86				
	LOWER LIMIT	34441	5.86				
	SAMPLE NO.						
01	MRC-MW-80A-0	51468	6.36				
02	MRC-MW-80B-0	51335	6.36				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

EPA Sample No. (SSTD050##): 1235 Date Analyzed: 08/13/14

Lab File ID (Standard): 12081304 Time Analyzed: 1713

Instrument ID: MS12 GC Column: ZB-625 ID:0.25(mm)

	IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56413	6.33				
	UPPER LIMIT	73337	6.83				
	LOWER LIMIT	39489	5.83				
	SAMPLE NO.						
01	2ND-0.1	51755	6.36				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 = Tetrahydrofuran-d8

AREA UPPER LIMIT = + 30% of internal standard area
AREA LOWER LIMIT = - 30% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1800	1800	05/05/15	0921	8.38			
02	2172660	2172660	05/05/15	0946	8.38			
03	2172661LCSLO	2172661	05/05/15	1013	8.36			
04	MIDCHECK-5	MIDCHECK-5	05/05/15	1522	8.38			
05	MRC-MW-80A-0	2067894002	05/05/15	1822	8.36			
06	MRC-MW-80B-0	2067894003	05/05/15	1847	8.36			
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.03 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE ANALYTICAL SEQUENCE

Lab Name: ALSI Contract:

Lab Code: PA-010 Case No.: SAS No.: SDG No.: TMM026

GC Column: ZB-625 ID: 0.25(mm) Init. Calib. Date(s): 08/13/14 08/13/14

Instrument ID: MS12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.38

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01	1000	1000	08/13/14	1534				
02	1234	1234	08/13/14	1643	8.38			
03	1235	1235	08/13/14	1713	8.36			
04	1236	1236	08/13/14	1742	8.38			
05	1237	1237	08/13/14	1814	8.38			
06	1238	1238	08/13/14	1845	8.38			
07	1239	1239	08/13/14	1918	8.38			
08	1240	1240	08/13/14	1950	8.38			
09	1241	1241	08/13/14	2018	8.36			
10	1242	1242	08/13/14	2046	8.38			
11	2ND-0.1	2ND-0.1	08/13/14	2119	8.38			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

QC LIMITS
S1 = 1,4-Dioxane-d8 (+/- 0.64 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-026

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	0900																									
BLK	1.00	0903			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 1	1.00	0907			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 2	1.00	0911			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 3	1.00	0914			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 4	1.00	0918			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
STANDARD 5	1.00	0922			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICV	1.00	0925			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	0929																										
ICB2	1.00	0932			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLICV	1.00	0942			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICS-A1	1.00	0945			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ICS-AB1	1.00	0949			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1001																										
ZZZZZZ	1.00	1005																										
ZZZZZZ	1.00	1009																										
ZZZZZZ	1.00	1012																										
ZZZZZZ	1.00	1016																										
ZZZZZZ	5.00	1019																										
ZZZZZZ	5.00	1023																										
ZZZZZZ	5.00	1027																										
ZZZZZZ	1.00	1030																										
ZZZZZZ	1.00	1034																										
ZZZZZZ	1.00	1038																										
ZZZZZZ	1.00	1041																										
ZZZZZZ	1.00	1045																										
ZZZZZZ	1.00	1049																										
ZZZZZZ	1.00	1052																										
ZZZZZZ	1.00	1056																										
ZZZZZZ	1.00	1100																										
ZZZZZZ	1.00	1103																										
ZZZZZZ	1.00	1107																										
ZZZZZZ	1.00	1110																										
ZZZZZZ	1.00	1114																										
ZZZZZZ	1.00	1118																										
ZZZZZZ	1.00	1121																										

6020 3015

14

ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-026

Instrument ID Number: AGILENT 77002 ICPMS Method: M Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
ZZZZZZ	1.00	1125																									
ZZZZZZ	1.00	1128																									
ZZZZZZ	1.00	1132																									
CCV3	1.00	1136			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
CCB3	1.00	1139			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1143			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2171266	1.00	1304			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2171267	1.00	1307			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1311																									
ZZZZZZ	1.00	1315																									
ZZZZZZ	5.00	1318																									
2067894002	1.00	1322			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2067894002S	1.00	1326			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
2067894002SD	1.00	1329			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1333																									
CCB4	1.00	1336			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
LLCCV	1.00	1340			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
CCV5	1.00	1344			X	X	X		X		X	X	X		X		X		X		X	X		X	X			*
ZZZZZZ	1.00	1349																									
ZZZZZZ	1.00	1352																									
ZZZZZZ	1.00	1358																									
ZZZZZZ	1.00	1402																									
ZZZZZZ	1.00	1405																									
ZZZZZZ	1.00	1409																									
ZZZZZZ	1.00	1412																									

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM026|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-026

Instrument ID Number: AGILENT 77002 ICPMS **Method:** M **Run Number:** B043015A 141

Start Date: 4/30/2015 **End Date:** 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1418																								
BLK	1.00	1421						X																		
STANDARD 1	1.00	1425						X																		
STANDARD 2	1.00	1429						X																		
STANDARD 3	1.00	1432						X																		
STANDARD 4	1.00	1436						X																		
STANDARD 5	1.00	1440						X																		
ICV	1.00	1443						X																		
ICB1	1.00	1447						X																		
LLICV	1.00	1450						X																		
ICS-A1	1.00	1454						X																		
ICS-AB1	1.00	1458						X																		
ZZZZZZ	1.00	1501																								
ZZZZZZ	1.00	1505																								
2171266	1.00	1509						X																		
2171267	1.00	1512						X																		
ZZZZZZ	1.00	1516																								
ZZZZZZ	1.00	1520																								
ZZZZZZ	5.00	1523																								
2067894002	1.00	1527						X																		
2067894002S	1.00	1531						X																		
2067894002SD	1.00	1534						X																		
ZZZZZZ	5.00	1538																								
CCV1	1.00	1541						X																		
CCB1	1.00	1545						X																		
LLCCV	1.00	1548						X																		
ZZZZZZ	1.00	1552																								
ZZZZZZ	1.00	1556																								
ZZZZZZ	1.00	1600																								
ZZZZZZ	1.00	1603																								

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: SAS No.: SDG No.: TMM-026

Instrument ID Number: AGILENT 77002 ICPMS Run Number: B043015 0900

Start Date: 4/30/2015 End Date: 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	09:00																									
BLK	1.00	09:03					X																				
STANDARD 1	1.00	09:07					X																				
STANDARD 2	1.00	09:11					X																				
STANDARD 3	1.00	09:14					X																				
STANDARD 4	1.00	09:18					X																				
STANDARD 5	1.00	09:22					X																				
ICV	1.00	09:25					X																				
ZZZZZZ	1.00	09:29																									
ICB2	1.00	09:32					X																				
LLICV	1.00	09:42					X																				
ICS-A1	1.00	09:45					X																				
ICS-AB1	1.00	09:49					X																				
ZZZZZZ	1.00	10:01																									
ZZZZZZ	1.00	10:05																									
ZZZZZZ	1.00	10:09																									
ZZZZZZ	1.00	10:12																									
ZZZZZZ	1.00	10:16																									
ZZZZZZ	5.00	10:19																									
ZZZZZZ	5.00	10:23																									
ZZZZZZ	5.00	10:27																									
ZZZZZZ	1.00	10:30																									
ZZZZZZ	1.00	10:34																									
ZZZZZZ	1.00	10:38																									
ZZZZZZ	1.00	10:41																									
ZZZZZZ	1.00	10:45																									
ZZZZZZ	1.00	10:49																									
ZZZZZZ	1.00	10:52																									
ZZZZZZ	1.00	10:56																									
ZZZZZZ	1.00	11:00																									
ZZZZZZ	1.00	11:03																									

6020 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM026|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-026

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B043015 0900

Start Date: 4/30/2015 **End Date:** 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR							
ZZZZZZ	1.00	11:07																										
ZZZZZZ	1.00	11:10																										
ZZZZZZ	1.00	11:14																										
ZZZZZZ	1.00	11:18																										
ZZZZZZ	1.00	11:21																										
ZZZZZZ	1.00	11:25																										
ZZZZZZ	1.00	11:28																										
ZZZZZZ	1.00	11:32																										
CCV3	1.00	11:36					X																					
CCB3	1.00	11:39					X																					
LLCCV	1.00	11:43					X																					
2171266	1.00	13:04					X																					
2171267	1.00	13:07					X																					
ZZZZZZ	1.00	13:11																										
ZZZZZZ	1.00	13:15																										
ZZZZZZ	5.00	13:18																										
2067894002	1.00	13:22					X																					
2067894002S	1.00	13:26					X																					
2067894002SD	1.00	13:29					X																					
ZZZZZZ	1.00	13:33																										
CCB4	1.00	13:36					X																					
LLCCV	1.00	13:40					X																					
CCV5	1.00	13:44					X																					
ZZZZZZ	1.00	13:49																										
ZZZZZZ	1.00	13:52																										
ZZZZZZ	1.00	13:58																										
ZZZZZZ	1.00	14:02																										
ZZZZZZ	1.00	14:05																										
ZZZZZZ	1.00	14:09																										
ZZZZZZ	1.00	14:12																										

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh **Contract:** TMM026|112IC06247

Lab Code: CAS **Case No.:** **SAS No.:** **SDG No.:** TMM-026

Instrument ID Number: AGILENT 77002 ICPMS **Run Number:** B043015A 141

Start Date: 4/30/2015 **End Date:** 4/30/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TE	ZR						
ZZZZZZ	1.00	14:18																									
BLK	1.00	14:21																									
STANDARD 1	1.00	14:25																									
STANDARD 2	1.00	14:29																									
STANDARD 3	1.00	14:32																									
STANDARD 4	1.00	14:36																									
STANDARD 5	1.00	14:40																									
ICV	1.00	14:43																									
ICB1	1.00	14:47																									
LLICV	1.00	14:50																									
ICS-A1	1.00	14:54																									
ICS-AB1	1.00	14:58																									
ZZZZZZ	1.00	15:01																									
ZZZZZZ	1.00	15:05																									
2171266	1.00	15:09																									
2171267	1.00	15:12																									
ZZZZZZ	1.00	15:16																									
ZZZZZZ	1.00	15:20																									
ZZZZZZ	5.00	15:23																									
2067894002	1.00	15:27																									
2067894002S	1.00	15:31																									
2067894002SD	1.00	15:34																									
ZZZZZZ	5.00	15:38																									
CCV1	1.00	15:41																									
CCB1	1.00	15:45																									
LLCCV	1.00	15:48																									
ZZZZZZ	1.00	15:52																									
ZZZZZZ	1.00	15:56																									
ZZZZZZ	1.00	16:00																									
ZZZZZZ	1.00	16:03																									

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV										
	Antimony	0.1005	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Arsenic	0.0990	0.1000	99		90 - 110	M	4/30/2015	09:25	B043015 09
	Barium	0.0982	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Cadmium	0.0978	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Chromium	0.0997	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Cobalt	0.0989	0.1000	99		90 - 110	M	4/30/2015	09:25	B043015 09
	Copper	0.1002	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Lead	0.0953	0.1000	95		90 - 110	M	4/30/2015	09:25	B043015 09
	Manganese	0.1001	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
	Molybdenum	0.0970	0.1000	97		90 - 110	M	4/30/2015	09:25	B043015 09
	Nickel	0.0980	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Selenium	0.0971	0.1000	97		90 - 110	M	4/30/2015	09:25	B043015 09
	Silver	0.0980	0.1000	98		90 - 110	M	4/30/2015	09:25	B043015 09
	Thallium	0.0960	0.1000	96		90 - 110	M	4/30/2015	09:25	B043015 09
	Vanadium	0.1005	0.1000	100		90 - 110	M	4/30/2015	09:25	B043015 09
LLICV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	09:42	B043015 09
	Arsenic	0.0030	0.0030	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/30/2015	09:42	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/30/2015	09:42	B043015 09
	Copper	0.0046	0.0050	92		70 - 130	M	4/30/2015	09:42	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Manganese	0.0047	0.0050	94		70 - 130	M	4/30/2015	09:42	B043015 09
	Molybdenum	0.0020	0.0020	100		70 - 130	M	4/30/2015	09:42	B043015 09
	Nickel	0.0049	0.0050	98		70 - 130	M	4/30/2015	09:42	B043015 09
	Selenium	0.0052	0.0050	104		70 - 130	M	4/30/2015	09:42	B043015 09
	Silver	0.0018	0.0020	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	09:42	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	09:42	B043015 09

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
CCV										
	Antimony	0.1009	0.1000	101		90 - 110	M	4/30/2015	11:36	B043015 09
	Arsenic	0.1018	0.1000	102		90 - 110	M	4/30/2015	11:36	B043015 09
	Barium	0.0963	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Cadmium	0.0954	0.1000	95		90 - 110	M	4/30/2015	11:36	B043015 09
	Chromium	0.1000	0.1000	100		90 - 110	M	4/30/2015	11:36	B043015 09
	Cobalt	0.0983	0.1000	98		90 - 110	M	4/30/2015	11:36	B043015 09
	Copper	0.0998	0.1000	100		90 - 110	M	4/30/2015	11:36	B043015 09
	Lead	0.0948	0.1000	95		90 - 110	M	4/30/2015	11:36	B043015 09
	Manganese	0.0990	0.1000	99		90 - 110	M	4/30/2015	11:36	B043015 09
	Molybdenum	0.0941	0.1000	94		90 - 110	M	4/30/2015	11:36	B043015 09
	Nickel	0.0972	0.1000	97		90 - 110	M	4/30/2015	11:36	B043015 09
	Selenium	0.0984	0.1000	98		90 - 110	M	4/30/2015	11:36	B043015 09
	Silver	0.0957	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Thallium	0.0956	0.1000	96		90 - 110	M	4/30/2015	11:36	B043015 09
	Vanadium	0.1006	0.1000	101		90 - 110	M	4/30/2015	11:36	B043015 09
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	11:43	B043015 09
	Arsenic	0.0031	0.0030	103		70 - 130	M	4/30/2015	11:43	B043015 09
	Barium	0.0049	0.0050	98		70 - 130	M	4/30/2015	11:43	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	11:43	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Cobalt	0.0046	0.0050	92		70 - 130	M	4/30/2015	11:43	B043015 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/30/2015	11:43	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Manganese	0.0048	0.0050	96		70 - 130	M	4/30/2015	11:43	B043015 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/30/2015	11:43	B043015 09
	Nickel	0.0051	0.0050	102		70 - 130	M	4/30/2015	11:43	B043015 09
	Selenium	0.0049	0.0050	98		70 - 130	M	4/30/2015	11:43	B043015 09
	Silver	0.0018	0.0020	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	11:43	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	11:43	B043015 09

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLCCV										
	Antimony	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
	Arsenic	0.0033	0.0030	110		70 - 130	M	4/30/2015	13:40	B043015 09
	Barium	0.0052	0.0050	104		70 - 130	M	4/30/2015	13:40	B043015 09
	Cadmium	0.0010	0.0010	100		70 - 130	M	4/30/2015	13:40	B043015 09
	Chromium	0.0018	0.0020	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Cobalt	0.0047	0.0050	94		70 - 130	M	4/30/2015	13:40	B043015 09
	Copper	0.0047	0.0050	94		70 - 130	M	4/30/2015	13:40	B043015 09
	Lead	0.0018	0.0020	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Manganese	0.0048	0.0050	96		70 - 130	M	4/30/2015	13:40	B043015 09
	Molybdenum	0.0021	0.0020	105		70 - 130	M	4/30/2015	13:40	B043015 09
	Nickel	0.0051	0.0050	102		70 - 130	M	4/30/2015	13:40	B043015 09
	Selenium	0.0044	0.0050	88		70 - 130	M	4/30/2015	13:40	B043015 09
	Silver	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
	Thallium	0.0009	0.0010	90		70 - 130	M	4/30/2015	13:40	B043015 09
	Vanadium	0.0019	0.0020	95		70 - 130	M	4/30/2015	13:40	B043015 09
CCV										
	Antimony	0.1007	0.1000	101		90 - 110	M	4/30/2015	13:44	B043015 09
	Arsenic	0.0997	0.1000	100		90 - 110	M	4/30/2015	13:44	B043015 09
	Barium	0.0986	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Cadmium	0.0978	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
	Chromium	0.0987	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Cobalt	0.0978	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
	Copper	0.0997	0.1000	100		90 - 110	M	4/30/2015	13:44	B043015 09
	Lead	0.0948	0.1000	95		90 - 110	M	4/30/2015	13:44	B043015 09
	Manganese	0.0990	0.1000	99		90 - 110	M	4/30/2015	13:44	B043015 09
	Molybdenum	0.0957	0.1000	96		90 - 110	M	4/30/2015	13:44	B043015 09
	Nickel	0.0972	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Selenium	0.0973	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Silver	0.0968	0.1000	97		90 - 110	M	4/30/2015	13:44	B043015 09
	Thallium	0.0958	0.1000	96		90 - 110	M	4/30/2015	13:44	B043015 09
	Vanadium	0.0981	0.1000	98		90 - 110	M	4/30/2015	13:44	B043015 09
ICV										
	Beryllium	0.0986	0.1000	99		90 - 110	M	4/30/2015	14:43	B043015A 1

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- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
LLICV										
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/30/2015	14:50	B043015A 1
CCV										
	Beryllium	0.0963	0.1000	96		90 - 110	M	4/30/2015	15:41	B043015A 1
LLCCV										
	Beryllium	0.0010	0.0010	100		70 - 130	M	4/30/2015	15:48	B043015A 1

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	09:32	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	09:32	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Molybdenum	0.0050	U	0.00070	0.0007	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	09:32	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	09:32	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	09:32	B043015 0900 0
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	11:39	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	11:39	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	11:39	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	11:39	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	11:39	B043015 0900 0

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
CCB										
	Antimony	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Arsenic	0.0027	U	0.0010	0.0010	0.0027	M	4/30/2015	13:36	B043015 0900 0
	Barium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Cadmium	0.0010	U	0.00040	0.0004	0.0010	M	4/30/2015	13:36	B043015 0900 0
	Chromium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Cobalt	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Copper	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Lead	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Manganese	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Molybdenum	0.0008	J	0.00070	0.0007	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Nickel	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Selenium	0.0050	U	0.0019	0.0019	0.0050	M	4/30/2015	13:36	B043015 0900 0
	Silver	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
	Thallium	0.0009	U	0.00030	0.0003	0.0009	M	4/30/2015	13:36	B043015 0900 0
	Vanadium	0.0020	U	0.00070	0.0007	0.0020	M	4/30/2015	13:36	B043015 0900 0
ICB										
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/30/2015	14:47	B043015A 141
CCB										
	Beryllium	0.000900	U	0.00030	0.000300	0.000900	M	4/30/2015	15:45	B043015A 141

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2171266			**QC-WATER**								
	Antimony	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Arsenic	0.00300	U		0.00300	0.00100	0.00300	M	4/30/2015	13:04	B043015 0900 0
	Barium	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Beryllium	0.001000	U		0.001000	0.000300	0.001000	M	4/30/2015	15:09	B043015A 1415
	Cadmium	0.00111	U		0.00111	0.00037	0.00111	M	4/30/2015	13:04	B043015 0900 0
	Chromium	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Cobalt	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Copper	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Lead	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Manganese	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Molybdenum	0.00556	U		0.00556	0.00074	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Nickel	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Selenium	0.00556	U		0.00556	0.00190	0.00556	M	4/30/2015	13:04	B043015 0900 0
	Silver	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0
	Thallium	0.00100	U		0.00100	0.00030	0.00100	M	4/30/2015	13:04	B043015 0900 0
	Vanadium	0.00222	U		0.00222	0.00074	0.00222	M	4/30/2015	13:04	B043015 0900 0

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Antimony	0.0003				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
	Arsenic	0.0002				-0.00300 - -0.00300	4/30/2015	09:45	B043015 0900 (
	Barium	0.0004				-0.01000 - -0.01000	4/30/2015	09:45	B043015 0900 (
	Cadmium	0.0012			*	-0.00100 - -0.00100	4/30/2015	09:45	B043015 0900 (
	Chromium	0.0006				-0.00400 - -0.00400	4/30/2015	09:45	B043015 0900 (
	Cobalt	0.0007				-0.00600 - -0.00600	4/30/2015	09:45	B043015 0900 (
	Copper	0.0016				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Lead	0.0001				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
	Manganese	0.0013				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Molybdenum	2.3574	2.00000	118		80 - 120%	4/30/2015	09:45	B043015 0900 (
	Nickel	0.0010				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Selenium	0.0000				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Silver	0.0005				-0.00500 - -0.00500	4/30/2015	09:45	B043015 0900 (
	Thallium	0.00001				-0.001000 - -0.001000	4/30/2015	09:45	B043015 0900 (
	Vanadium	0.0002				-0.00200 - -0.00200	4/30/2015	09:45	B043015 0900 (
ICSAB									
	Antimony	0.0004				-0.00200 - -0.00200	4/30/2015	09:49	B043015 0900 (
	Arsenic	0.0216	0.02000	108		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Barium	0.0003				-0.00500 - -0.00500	4/30/2015	09:49	B043015 0900 (
	Cadmium	0.0107	0.01000	107		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Chromium	0.0186	0.02000	93		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Cobalt	0.0349	0.04000	87		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Copper	0.0184	0.02000	92		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Lead	0.0002				-0.00200 - -0.00200	4/30/2015	09:49	B043015 0900 (
	Manganese	0.0195	0.02000	98		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Molybdenum	2.2144	2.00000	111		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Nickel	0.0371	0.04000	93		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Selenium	0.0204	0.02000	102		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Silver	0.0185	0.02000	92		80 - 120%	4/30/2015	09:49	B043015 0900 (
	Thallium	0.00001				-0.001000 - -0.001000	4/30/2015	09:49	B043015 0900 (
	Vanadium	0.0420	0.04000	105		80 - 120%	4/30/2015	09:49	B043015 0900 (
ICSA									
	Beryllium	0.00001				-0.001000 - -0.001000	4/30/2015	14:54	B043015A 14

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

ICS Source: Inorganic Ventures **Instrument ID:** AGILENT 77002 ICPMS

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSAB									
	Beryllium	0.00000				-0.001000 - -0.001000	4/30/2015	14:58	B043015A 14

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002 **Client ID:** MRC-MW-80A-042915S **LIMS ID:** 2171268

Percent Solids for Sample: 0.00 **Spiked ID:** 2067894002S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.22		0.00		0.222	99		M
Arsenic	mg/L	75 - 125	0.222		0.003	U	0.222	100		M
Barium	mg/L	75 - 125	2.351		0.028		2.222	105		M
Beryllium	mg/L	75 - 125	0.20589		0.00058		0.22222	92		M
Cadmium	mg/L	75 - 125	0.230		0.000		0.222	104		M
Chromium	mg/L	75 - 125	0.211		0.002		0.222	94		M
Cobalt	mg/L	75 - 125	0.202		0.006	U	0.222	91		M
Copper	mg/L	75 - 125	0.203		0.002		0.222	91		M
Lead	mg/L	75 - 125	0.223		0.002	U	0.222	100		M
Manganese	mg/L	75 - 125	0.223		0.014		0.222	94		M
Molybdenum	mg/L	75 - 125	0.243		0.006	U	0.222	109		M
Nickel	mg/L	75 - 125	0.207		0.005		0.222	91		M
Selenium	mg/L	75 - 125	0.204		0.006	U	0.222	92		M
Silver	mg/L	75 - 125	0.111		0.002	U	0.111	100		M
Thallium	mg/L	75 - 125	0.2155		0.0010	U	0.2222	97		M
Vanadium	mg/L	75 - 125	0.212		0.002	U	0.222	95		M

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002 **Client ID:** MRC-MW-80A-042915SD **LIMS ID:** 2171269

Percent Solids for Sample: 0.00 **Spiked ID:** 2067894002SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Antimony	mg/L	75 - 125	0.21		0.00		0.222	95		M
Arsenic	mg/L	75 - 125	0.217		0.003	U	0.222	98		M
Barium	mg/L	75 - 125	2.298		0.028		2.222	102		M
Beryllium	mg/L	75 - 125	0.20201		0.00058		0.22222	91		M
Cadmium	mg/L	75 - 125	0.226		0.000		0.222	102		M
Chromium	mg/L	75 - 125	0.206		0.002		0.222	92		M
Cobalt	mg/L	75 - 125	0.200		0.006	U	0.222	90		M
Copper	mg/L	75 - 125	0.200		0.002		0.222	89		M
Lead	mg/L	75 - 125	0.218		0.002	U	0.222	98		M
Manganese	mg/L	75 - 125	0.221		0.014		0.222	93		M
Molybdenum	mg/L	75 - 125	0.238		0.006	U	0.222	107		M
Nickel	mg/L	75 - 125	0.202		0.005		0.222	89		M
Selenium	mg/L	75 - 125	0.197		0.006	U	0.222	89		M
Silver	mg/L	75 - 125	0.106		0.002	U	0.111	95		M
Thallium	mg/L	75 - 125	0.2095		0.0010	U	0.2222	94		M
Vanadium	mg/L	75 - 125	0.209		0.001		0.222	94		M

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002S **Client ID:** MRC-MW-80A-042915SD **LIMS ID:** 2171269

Percent Solids for Sample: 0.00 **Duplicate ID:** 2067894002SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Antimony	mg/L	0 - 20	0.22		0.21		5		M
Arsenic	mg/L	0 - 20	0.222		0.217		2		M
Barium	mg/L	0 - 20	2.351		2.298		2		M
Beryllium	mg/L	0 - 20	0.20589		0.20201		2		M
Cadmium	mg/L	0 - 20	0.230		0.226		2		M
Chromium	mg/L	0 - 20	0.211		0.206		2		M
Cobalt	mg/L	0 - 20	0.202		0.200		1		M
Copper	mg/L	0 - 20	0.203		0.200		1		M
Lead	mg/L	0 - 20	0.223		0.218		2		M
Manganese	mg/L	0 - 20	0.223		0.221		1		M
Molybdenum	mg/L	0 - 20	0.243		0.238		2		M
Nickel	mg/L	0 - 20	0.207		0.202		2		M
Selenium	mg/L	0 - 20	0.204		0.197		3		M
Silver	mg/L	0 - 20	0.111		0.106		5		M
Thallium	mg/L	0 - 20	0.2155		0.2095		3		M
Vanadium	mg/L	0 - 20	0.212		0.209		1		M

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2171267									
	Antimony	mg/L	0.2220	0.2136		96		80 - 120	M
	Arsenic	mg/L	0.2220	0.2123		96		80 - 120	M
	Barium	mg/L	2.2220	2.3137		104		80 - 120	M
	Beryllium	mg/L	0.2220	0.2061		93		80 - 120	M
	Cadmium	mg/L	0.2220	0.2289		103		80 - 120	M
	Chromium	mg/L	0.2220	0.2116		95		80 - 120	M
	Cobalt	mg/L	0.2220	0.2090		94		80 - 120	M
	Copper	mg/L	0.2220	0.2072		93		80 - 120	M
	Lead	mg/L	0.2220	0.2181		98		80 - 120	M
	Manganese	mg/L	0.2220	0.2129		96		80 - 120	M
	Molybdenum	mg/L	0.2220	0.2320		105		80 - 120	M
	Nickel	mg/L	0.2220	0.2106		95		80 - 120	M
	Selenium	mg/L	0.2220	0.1933		87		80 - 120	M
	Silver	mg/L	0.1110	0.1118		101		80 - 120	M
	Thallium	mg/L	0.2220	0.2091		94		80 - 120	M
	Vanadium	mg/L	0.2220	0.2094		94		80 - 120	M

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

Instrument ID: AGILENT 77002 ICPMS **Date:** 4/2/2013

Analyte	Integration Time (sec)	LDR mg/L
Antimony	1.00	5
Arsenic	1.00	5
Barium	1.00	50
Beryllium	1.00	5
Cadmium	1.00	5
Chromium	1.00	50
Cobalt	1.00	5
Copper	1.00	50
Lead	1.00	5
Manganese	1.00	6
Molybdenum	1.00	2
Nickel	1.00	5
Selenium	1.00	5
Silver	1.00	5
Thallium	1.00	5
Vanadium	1.00	5

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Method:** MS

Case No.: **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70297						
2171266	MB for HBN 70297 [MDIG/50615	MB	QC-WAT	4/30/15	45.0	50.0	
2171267	LCS for HBN 70297 [MDIG/50615	LCS	QC-WAT	4/30/15	45.0	50.0	
2067894002	MRC-MW-80A-042915	SAM	WATER	4/30/15	45.0	50.0	
2067894002S	MRC-MW-80A-042915S	MS	WATER	4/30/15	45.0	50.0	
2067894002SD	MRC-MW-80A-042915SD	MSD	WATER	4/30/15	45.0	50.0	

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
ICAL1	1.00	0853												X																
ICAL2	1.00	0856												X																
ICAL3	1.00	0900												X																
ICAL4	1.00	0903												X																
ICAL5	1.00	0906												X																
ZZZZZZ	1.00	0908																												
ICV2	1.00	0912												X																
ICB1	1.00	0916												X																
CRDL1	1.00	0919												X																
CCV1	1.00	0922												X																
HIGH	1.00	0925												X																
ZZZZZZ	1.00	0928																												
ZZZZZZ	1.00	0931																												
ICS-A2	1.00	0936												X																
ICS-AB2	1.00	0939												X																
ZZZZZZ	1.00	0945																												
ZZZZZZ	1.00	0948																												
ZZZZZZ	1.00	0951																												
ZZZZZZ	1.00	0954																												
ZZZZZZ	1.00	0957																												
ZZZZZZ	5.00	1000																												
ZZZZZZ	5.00	1003																												
ZZZZZZ	5.00	1007																												
ZZZZZZ	5.00	1010																												
ZZZZZZ	5.00	1013																												
ZZZZZZ	1.00	1016																												
ZZZZZZ	1.00	1019																												
ZZZZZZ	5.00	1022																												
ZZZZZZ	5.00	1025																												
ZZZZZZ	5.00	1029																												
ZZZZZZ	5.00	1032																												
ZZZZZZ	5.00	1035																												
ZZZZZZ	5.00	1038																												
ZZZZZZ	5.00	1041																												
ZZZZZZ	5.00	1044																												
ZZZZZZ	5.00	1048																												

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.00	1051																									
ZZZZZZ	1.00	1054																									
ZZZZZZ	1.00	1057																									
ZZZZZZ	5.00	1100																									
ZZZZZZ	5.00	1103																									
ZZZZZZ	1.00	1107																									
ZZZZZZ	1.00	1110																									
ZZZZZZ	1.00	1113																									
ZZZZZZ	1.00	1116																									
ZZZZZZ	5.00	1120																									
ZZZZZZ	1.00	1131																									
CCV4	1.00	1134											X														
CCB3	1.00	1137											X														
LLCCV	1.00	1140											X														
ICS-A3	1.00	1144											X														
ICS-AB3	1.00	1147											X														
2172593	1.00	1154											X														
2172594	1.00	1157											X														
ZZZZZZ	5.00	1200																									
ZZZZZZ	5.00	1203																									
ZZZZZZ	1.00	1206																									
ZZZZZZ	1.00	1209																									
ZZZZZZ	1.00	1212																									
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1218																									
2067894002	1.00	1221											X														
CCV5	1.00	1225											X														
CCB4	1.00	1227											X														
ZZZZZZ	5.00	1231																									
ZZZZZZ	1.00	1234																									
ZZZZZZ	1.00	1237																									
ZZZZZZ	1.00	1240																									
ZZZZZZ	1.00	1243																									
ZZZZZZ	1.00	1246																									
ZZZZZZ	1.00	1250																									
ZZZZZZ	1.00	1253																									

6010C 3015

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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Thermo ICP 6500_2 Method: P Run Number: 050415 3015

Start Date: 5/4/2015 End Date: 5/4/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1259																									
ZZZZZZ	1.00	1302																									
ZZZZZZ	1.00	1305																									
ZZZZZZ	1.00	1309																									
ZZZZZZ	1.00	1312																									
ZZZZZZ	1.00	1315																									
ZZZZZZ	1.00	1318																									
ZZZZZZ	1.00	1321																									
ZZZZZZ	1.00	1324																									
ZZZZZZ	1.00	1328																									
ZZZZZZ	1.00	1331																									
ZZZZZZ	1.00	1334																									
ZZZZZZ	1.00	1337																									
CCV7	1.00	1340											X														
CCB6	1.00	1343											X														
LLCCV	1.00	1358											X														
ZZZZZZ	1.00	1401																									
ICS-AB4	1.00	1405											X														
ICS-A5	1.00	1408											X														

6010C 3015
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: VHG

Continuing Calibration Source: High Purity

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Iron	0.990	1.000	99		90 - 110	P	5/4/2015	09:12	050415 3015
CCV	Iron	2.507	2.500	100		90 - 110	P	5/4/2015	09:22	050415 3015
CCV	Iron	2.458	2.500	98		90 - 110	P	5/4/2015	11:34	050415 3015
LLCCV	Iron	0.059	0.060	98		70 - 130	P	5/4/2015	11:40	050415 3015
CCV	Iron	2.489	2.500	100		90 - 110	P	5/4/2015	12:25	050415 3015
CCV	Iron	2.481	2.500	99		90 - 110	P	5/4/2015	13:40	050415 3015
LLCCV	Iron	0.058	0.060	97		70 - 130	P	5/4/2015	13:58	050415 3015

6010C 3015
- 2b -
CRDL STANDARD FOR AA & ICP

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** **SAS No.:**

AA CRDL Standard Source: High Purity Lockheed Martin

ICP CRDL Standard Source:

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL										
	Iron	0.058	0.060	97		70 - 130	P	5/4/2015	09:19	050415 301

6010C 3015

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	09:16	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	11:37	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	12:27	050415 3015
CCB	Iron	0.060	U	0.060	0.022	0.060	P	5/4/2015	13:43	050415 3015

6010C 3015
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2172593			**QC-WATER**								
	Iron	0.026	J		0.067	0.022	0.067	P	5/4/2015	11:54	050415 3015

6010C 3015

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INTERFERENCE CHECK SAMPLE

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

ICS Source: **Instrument ID:** Thermo ICP 6500_2

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	Analysis Date	Analysis Time	Run Number
ICSA									
	Iron	111.0	125.0	89		80 - 120%	5/4/2015	09:36	050415 3015
ICSAB									
	Iron	111.5	125.0	89		80 - 120%	5/4/2015	09:39	050415 3015
ICSA									
	Iron	101.4	125.0	81		80 - 120%	5/4/2015	11:44	050415 3015
ICSAB									
	Iron	106.3	125.0	85		80 - 120%	5/4/2015	11:47	050415 3015
ICSAB									
	Iron	105.5	125.0	84		80 - 120%	5/4/2015	14:05	050415 3015
ICSA									
	Iron	109.4	125.0	88		80 - 120%	5/4/2015	14:08	050415 3015

6010C 3015

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: High Purity **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2172594									
	Iron	mg/L	1.11	1.239		112		80 - 120	P

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	As
Aluminum	308.215	0.0000000	0.0000000	0.0005270	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000090	0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000050	0.0000000	-0.0000810	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000010	0.0000000	0.0000000	0.0000370
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0003450	0.0000000	0.0000000
Boron	223.061	0.0000000	0.0000000	0.0000980	0.0000000	0.0000000
Cadmium	228.802	0.0000000	0.0000000	-0.0000060	0.0000111	0.0070730
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000050	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Copper	324.754	-0.0000030	0.0000000	0.0000390	0.0000000	0.0000000
Iron	259.94	0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0001740	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	-0.0000080	0.0000200	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0000060	0.0000000	0.0000000
Nickel	231.604	0.0000030	0.0000010	-0.0000030	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0002530	0.0000000	0.0000000
Silver	320.8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000100	0.0000000	0.0000000	0.0000000
Thallium	190.864	-0.0000170	0.0000000	0.0000110	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Titanium	334.941	0.0000000	-0.0000010	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0000170	0.0000040	0.0000000
Zinc	213.856	0.0000000	0.0000020	0.0001370	0.0000370	0.0000000

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Co	Cr	Mn	Mo	Ni
Aluminum	308.215	-0.0004690	0.0000000	0.0000000	0.0201000	0.0000000
Antimony	206.838	0.0002240	0.0120000	0.0000000	-0.0092230	-0.0006070
Arsenic	189.042	0.0000000	-0.0031000	-0.0000060	0.0000490	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	-0.0000200	0.0000000
Boron	249.678	0.0010360	0.0002370	0.0000000	-0.0011930	0.0000000
Boron	223.061	-0.0056250	0.0000000	0.0000000	-0.0001450	0.0002340
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000180	-0.0001600
Calcium	317.933	0.0002040	0.0000000	0.0000000	0.0022740	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0005340	-0.0000370	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0000000	-0.0014940	0.0001230
Copper	324.754	-0.0009810	-0.0000400	0.0000000	0.0001050	0.0000000
Iron	259.94	0.0000000	0.0001870	0.0001640	-0.0006660	0.0000000
Lead	220.353	0.0001390	0.0000000	0.0001190	-0.0020450	0.0000460
Magnesium	279.079	0.0000000	0.0000000	-0.0021180	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	-0.0000190	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	-0.0001550	0.0000000	0.0000000
Nickel	231.604	-0.0001360	0.0000000	0.0000000	0.0013140	0.0000000
Selenium	196.0	-0.0001930	0.0000000	0.0006620	0.0000580	0.0000000
Silver	320.8	0.0000050	0.0000000	0.0001820	0.0001170	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0015200	0.0000000	0.0011230	0.0000660	0.0000000
Tin	189.989	0.0000120	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0003560	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	-0.0047630	-0.0002540	-0.0000340	0.0000070
Zinc	213.856	0.0000000	0.0000000	0.0000000	-0.0001180	0.0068950

6010C 3015
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ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sb	Sn	Ti	V	
Aluminum	308.215	0.0000000	0.0000000	0.0010770	0.0945900	
Antimony	206.838	0.0000000	-0.0106350	0.0003650	-0.0010340	
Arsenic	189.042	0.0000530	0.0000000	0.0000000	0.0000450	
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.042	0.0000000	0.0000000	-0.0002880	0.0001230	
Boron	249.678	0.0000000	0.0000000	0.0001940	-0.0002630	
Boron	223.061	0.0000000	0.0000900	0.0000000	-0.0012140	
Cadmium	228.802	0.0000000	0.0000000	0.0000000	0.0000690	
Calcium	317.933	0.0000710	0.0001430	0.0000000	-0.0004010	
Chromium	267.716	0.0000000	0.0000000	0.0000000	-0.0000660	
Cobalt	228.616	0.0000000	0.0000000	0.0019740	0.0000060	
Copper	324.754	0.0000000	0.0000000	-0.0013320	-0.0003190	
Iron	259.94	0.0000000	0.0000230	0.0000000	0.0000000	
Lead	220.353	0.0000000	0.0000000	0.0000180	-0.0001460	
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	
Manganese	257.61	0.0000000	0.0000000	0.0000290	-0.0000160	
Molybdenum	202.03	0.0000000	0.0000000	0.0000030	-0.0001210	
Nickel	231.604	-0.0005790	0.0000000	0.0000000	-0.0000150	
Selenium	196.0	0.0000000	0.0000000	0.0000000	-0.0000210	
Silver	320.8	0.0000000	0.0000000	-0.0000320	0.0001090	
Strontium	421.552	0.0000000	0.0000840	0.0000000	0.0000000	
Thallium	190.864	0.0000000	0.0000000	-0.0016340	-0.0258650	
Tin	189.989	0.0000000	0.0000000	-0.0001030	0.0000000	
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	
Vanadium	292.402	0.0000000	0.0000000	0.0003480	0.0000000	
Zinc	213.856	0.0000000	0.0000230	-0.0004540	0.0000000	

6010C 3015
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 1/1/2010

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For:				
Aluminum	308.215					
Antimony	206.838					
Arsenic	189.042					
Barium	493.409					
Beryllium	313.042					
Boron	249.678					
Boron	223.061					
Cadmium	228.802					
Calcium	317.933					
Chromium	267.716					
Cobalt	228.616					
Copper	324.754					
Iron	259.94					
Lead	220.353					
Magnesium	279.079					
Magnesium	285.213					
Manganese	257.61					
Molybdenum	202.03					
Nickel	231.604					
Selenium	196.0					
Silver	320.8					
Strontium	421.552					
Thallium	190.864					
Tin	189.989					
Titanium	334.941					
Vanadium	292.402					
Zinc	213.856					

6010C 3015

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LINEAR RANGES

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Instrument ID: Thermo ICP 6500_2 **Date:** 7/31/2012

Analyte	Integration Time (sec)	LDR mg/L
Iron	100.00	450

6010C 3015
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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Method:** P

Case No.: Lockheed Martin **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	70824						
2172593	MB for HBN 70824 [MDIG/50654	MB	QC-WAT	5/4/15	45.0	50.0	
2172594	LCS for HBN 70824 [MDIG/50654	LCS	QC-WAT	5/4/15	45.0	50.0	
2067894002	MRC-MW-80A-042915	SAM	WATER	5/4/15	45.0	50.0	

7470A
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ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.00	1229																X									
Standard #1 (0.2ppb	1.00	1230																X									
	1.00	1231																X									
	1.00	1232																X									
	1.00	1233																X									
	1.00	1234																X									
ICV1	1.00	1236																X									
ICB1	1.00	1237																X									
ZZZZZZ	1.00	1238																									
ZZZZZZ	1.00	1239																									
ZZZZZZ	1.00	1240																									
ZZZZZZ	1.00	1241																									
ZZZZZZ	1.00	1242																									
ZZZZZZ	1.00	1243																									
ZZZZZZ	1.00	1244																									
ZZZZZZ	1.00	1245																									
ZZZZZZ	1.00	1246																									
ZZZZZZ	1.00	1247																									
ZZZZZZ	1.00	1249																									
ZZZZZZ	1.00	1250																									
ZZZZZZ	1.00	1251																									
ZZZZZZ	1.00	1252																									
ZZZZZZ	1.00	1253																									
ZZZZZZ	1.00	1254																									
ZZZZZZ	1.00	1255																									
ZZZZZZ	1.00	1256																									
ZZZZZZ	1.00	1257																									
ZZZZZZ	1.00	1258																									
ZZZZZZ	1.00	1259																									
ZZZZZZ	1.00	1300																									
CCV2	1.00	1301																X									
CCB2	1.00	1302																X									
ZZZZZZ	1.00	1304																									
ZZZZZZ	1.00	1305																									
ZZZZZZ	1.00	1306																									
ZZZZZZ	1.00	1307																									

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1308																												
ZZZZZZ	1.00	1309																												
ZZZZZZ	1.00	1310																												
2173295	1.00	1311																X												
2173296	1.00	1312																X												
ZZZZZZ	1.00	1313																												
CCV3	1.00	1314																X												
CCB3	1.00	1315																X												
ZZZZZZ	1.00	1316																												
ZZZZZZ	1.00	1318																												
2067894002	1.00	1319																X												
2067894002S	1.00	1320																X												
2067894002SD	1.00	1321																X												
ZZZZZZ	1.00	1322																												
ZZZZZZ	1.00	1323																												
ZZZZZZ	1.00	1324																												
ZZZZZZ	1.00	1325																												
ZZZZZZ	1.00	1326																												
CCV4	1.00	1327																X												
CCB4	1.00	1328																X												
ZZZZZZ	1.00	1330																												
ZZZZZZ	1.00	1331																												
ZZZZZZ	1.00	1332																												
ZZZZZZ	1.00	1333																												
ZZZZZZ	1.00	1334																												
ZZZZZZ	1.00	1335																												
ZZZZZZ	1.00	1336																												
ZZZZZZ	1.00	1337																												
ZZZZZZ	1.00	1338																												
ZZZZZZ	1.00	1339																												
ZZZZZZ	1.00	1340																												
ZZZZZZ	1.00	1342																												
ZZZZZZ	1.00	1343																												
ZZZZZZ	1.00	1344																												
ZZZZZZ	1.00	1345																												
ZZZZZZ	1.00	1346																												

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1347																								
ZZZZZZ	1.00	1348																								
ZZZZZZ	1.00	1349																								
ZZZZZZ	1.00	1350																								
ZZZZZZ	1.00	1352																								
ZZZZZZ	1.00	1353																								
ZZZZZZ	1.00	1354																								
ZZZZZZ	1.00	1355																								
ZZZZZZ	1.00	1356																								
ZZZZZZ	1.00	1357																								
ZZZZZZ	1.00	1358																								
ZZZZZZ	1.00	1359																								
ZZZZZZ	1.00	1400																								
ZZZZZZ	1.00	1401																								
ZZZZZZ	1.00	1402																								
ZZZZZZ	1.00	1403																								
ZZZZZZ	1.00	1404																								
ZZZZZZ	1.00	1405																								
ZZZZZZ	1.00	1406																								
ZZZZZZ	1.00	1407																								
ZZZZZZ	1.00	1409																								
ZZZZZZ	1.00	1410																								
ZZZZZZ	1.00	1411																								
ZZZZZZ	1.00	1412																								
ZZZZZZ	1.00	1413																								
ZZZZZZ	1.00	1415																								
ZZZZZZ	1.00	1417																								
ZZZZZZ	1.00	1418																								
ZZZZZZ	1.00	1419																								
ZZZZZZ	1.00	1420																								
ZZZZZZ	1.00	1421																								
ZZZZZZ	1.00	1422																								
ZZZZZZ	1.00	1423																								
ZZZZZZ	1.00	1424																								
ZZZZZZ	1.00	1425																								
ZZZZZZ	1.00	1426																								

7470A
14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1427																								
ZZZZZZ	1.00	1428																								
ZZZZZZ	1.00	1429																								
ZZZZZZ	1.00	1430																								
ZZZZZZ	1.00	1432																								
ZZZZZZ	1.00	1433																								
ZZZZZZ	1.00	1434																								
ZZZZZZ	1.00	1435																								
ZZZZZZ	1.00	1436																								
ZZZZZZ	1.00	1437																								
ZZZZZZ	1.00	1438																								
ZZZZZZ	1.00	1439																								
ZZZZZZ	1.00	1440																								
ZZZZZZ	1.00	1441																								
ZZZZZZ	1.00	1444																								
ZZZZZZ	1.00	1448																								
ZZZZZZ	1.00	1451																								
ZZZZZZ	1.00	1452																								
ZZZZZZ	1.00	1453																								
ZZZZZZ	1.00	1455																								
ZZZZZZ	1.00	1456																								
ZZZZZZ	1.00	1457																								
ZZZZZZ	1.00	1459																								
ZZZZZZ	50.00	1500																								
ZZZZZZ	50.00	1501																								
ZZZZZZ	50.00	1502																								
ZZZZZZ	50.00	1503																								
ZZZZZZ	1.00	1509																								
ZZZZZZ	1.00	1510																								
ZZZZZZ	1.00	1513																								
ZZZZZZ	1.00	1514																								
ZZZZZZ	1.00	1515																								
ZZZZZZ	1.00	1516																								
ZZZZZZ	1.00	1517																								
ZZZZZZ	1.00	1518																								
ZZZZZZ	1.00	1519																								

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14
ANALYSIS RUN LOG

Client: Tetra Tech Pittsburgh Contract: TMM026|112IC06247

Lab Code: CAS Case No.: Lockheed SAS No.: SDG No.: TMM-026

Instrument ID Number: Cetac Hg Method: CV Run Number: 050715W

Start Date: 5/7/2015 End Date: 5/7/2015

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1520																												
ZZZZZZ	50.00	1521																												
ZZZZZZ	50.00	1522																												
ZZZZZZ	1.00	1525																												
ZZZZZZ	1.00	1526																												

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result mg/L	True Value mg/L	% Recovery	Q	QC Criteria	M	Analysis Date	Analysis Time	Run Number
ICV	Mercury	0.0041	0.004	102		90 - 110	CV	5/7/2015	12:36	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:01	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:14	050715W
CCV	Mercury	0.0040	0.004	100		90 - 110	CV	5/7/2015	13:27	050715W

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result mg/L	Conc Qual	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
ICB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	12:37	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:02	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:15	050715W
CCB	Mercury	0.00050	U	0.00050	0.00016	0.00050	CV	5/7/2015	13:28	050715W

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PREPARATION BLANK SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Sample ID	Analyte	Result (mg/L)	Conc Qual	Q	QC Criteria	MDL	LOQ	M	Analysis Date	Analysis Time	Run
2173295			**QC-WATER**								
	Mercury	0.000500	U		0.000500	0.000160	0.000500	CV	5/7/2015	13:11	050715W

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MATRIX SPIKE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002 **Client ID:** MRC-MW-80A-042915S **LIMS ID:** 2173297

Percent Solids for Sample: 0.00 **Spiked ID:** 2067894002S **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0055		0.0005	U	0.0050	110.00		CV

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MATRIX SPIKE DUPLICATE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002 **Client ID:** MRC-MW-80A-042915SD **LIMS ID:** 2173298

Percent Solids for Sample: 0.00 **Spiked ID:** 2067894002SD **Percent Solids for Spike Sample:** 0.00

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/L	70 - 130	0.0054		0.0005	U	0.0050	108.00		CV

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DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **Level:** LOW **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Matrix: WATER **Sample ID:** 2067894002S **Client ID:** MRC-MW-80A-042915SD **LIMS ID:** 2173298

Percent Solids for Sample: 0.00 **Duplicate ID:** 2067894002SD **Percent Solids for Duplicate:** 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/L	0 - 20	0.0055		0.0054		1.8		CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Case No.:** Lockheed Martin **SAS No.:**

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Q	QC Criteria	M
2173296									
	Mercury	mg/L	0.0020	0.0018		90		85 - 115	CV

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SAMPLE PREPARATION SUMMARY

Client: Tetra Tech Pittsburgh **SDG No.:** TMM-026

Contract: TMM026|112IC06247 **Lab Code:** CAS **Method:** CV

Case No.: Lockheed Marti **SAS No.:**

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number:	71111						
2173295	MB for HBN 71111 [MDIG/50685	MB	QC-WAT	5/7/15	25.0	25.0	
2173296	LCS for HBN 71111 [MDIG/50685	LCS	QC-WAT	5/7/15	25.0	25.0	
2067894002	MRC-MW-80A-042915	SAM	WATER	5/7/15	25.0	25.0	
2067894002S	MRC-MW-80A-042915S	MS	WATER	5/7/15	25.0	25.0	
2067894002SD	MRC-MW-80A-042915SD	MSD	WATER	5/7/15	25.0	25.0	

SAMPLE ID **MRC-MW-80B-042915**

SAMPLE CALC **for cis-1,2-dichloroethene**

IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (ug/L)	Final Extract Volume (mL)	AVE RRF	CONCENTRATION (ug/L)
672056	1	25384	30	5	0.4641	2.44

SampleVolume (mL)
5

Sample Calculation

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-80B-042915

Lab Name: ALS Contract: HPJ019

Lab Code: VOA Case No.: SAS No.: SDG No.: TMM-026

Matrix (soil/water): WATER Lab Sample ID: 2067894003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 15050129.D

Level (low/med): Date Received: 4/29/15

% Moisture: not dec. 100.0 Date Analyzed: 5/1/15

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
124-48-1	Chlorodibromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
110-82-7	Cyclohexane	1.0	U
96-12-8	1,2-Dibromo-3-Chloropropane	7.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.5	
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	24.9	
156-59-2	cis-1,2-Dichloroethene	2.4	
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
123-91-1	1,4-Dioxane	320	U
100-41-4	Ethylbenzene	1.0	U
76-13-1	Freon 113	1.0	U
591-78-6	2-Hexanone	5.0	U

ALS Environmental Services

VOLATILE REPORT SW-846 Method 8260

Data file : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150501.b\15050129
Lab Smp Id: 2067894003 Client Smp ID: MRC-MW-80B-042915
Inj Date : 01-MAY-2015 08:50
Operator : JPA Inst ID: ms15.i
Smp Info : 2067894003;;1;;;;;
Misc Info : ZZ VOMS 35760 8260C_W
Comment :
Method : \\ALMDTWS014\TargetData\Chem2\ms15.i\15_2015\15150501.b\15-8260b
Meth Date : 01-May-2015 14:17 joshua Quant Type: ISTD
Cal Date : 29-APR-2015 01:57 Cal File: 15042859.D
Als bottle: 29
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: ALMDTW7046

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged
DF	1.000	sample dilution factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
1 Dichlorodifluoromethane	85	Compound Not Detected.						
2 Chloromethane	50	Compound Not Detected.						
3 Vinyl Chloride	62	Compound Not Detected.						
4 Bromomethane	94	Compound Not Detected.						
5 Chloroethane	64	Compound Not Detected.						
6 Pentane	41	Compound Not Detected.						
7 Trichlorofluoromethane	101	Compound Not Detected.						
8 Dichlorofluoromethane	67	Compound Not Detected.						
9 Ethyl Ether	74	Compound Not Detected.						
10 1,1-Dichloroethene	61	2.148	2.147	(0.549)	268665	24.9169	24.9169	
11 Freon 113	101	Compound Not Detected.						
12 Carbon Disulfide	76	Compound Not Detected.						
13 Iodomethane	127	Compound Not Detected.						
14 Acrolein	56	Compound Not Detected.						
15 Isopropyl Alcohol	45	Compound Not Detected.						
16 3-Chloro-1-propene	41	Compound Not Detected.						
17 Methylene Chloride	84	Compound Not Detected.						
18 Acetone	58	Compound Not Detected.						
19 Methyl acetate	74	Compound Not Detected.						
20 trans-1,2-Dichloroethene	61	Compound Not Detected.						
21 Hexane	57	Compound Not Detected.						

Sample Calculation

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	22 Methyl t-Butyl Ether	73	Compound Not Detected.						
	23 tert.- Butyl Alcohol	59	Compound Not Detected.						
	24 Acetonitrile	41	Compound Not Detected.						
	25 Diisopropyl ether	45	Compound Not Detected.						
	26 Chloroprene	53	Compound Not Detected.						
	27 1,1-Dichloroethane	63	2.906	2.906	(0.743)	21393	1.53899	1.53899	
	28 Acrylonitrile	53	Compound Not Detected.						
	29 Ethyl tert-butyl ether	59	Compound Not Detected.						
	30 n-Propanol	41	Compound Not Detected.						
	31 Vinyl Acetate	86	Compound Not Detected.						
	32 cis-1,2-Dichloroethene	61	3.195	3.201	(0.817)	25384	2.44168	2.44168	
	33 2,2-Dichloropropane	77	Compound Not Detected.						
	34 Bromochloromethane	128	Compound Not Detected.						
	35 Cyclohexane	84	Compound Not Detected.						
	36 Chloroform	83	Compound Not Detected.						
	37 Ethyl Acetate	43	Compound Not Detected.						
	38 Methyl acrylate	55	Compound Not Detected.						
	39 Carbon Tetrachloride	117	Compound Not Detected.						
	40 Tetrahydrofuran	42	Compound Not Detected.						
$	41 Dibromofluoromethane	113	3.441	3.441	(0.880)	190179	27.5049	27.5049	
	42 1,1,1-Trichloroethane	97	Compound Not Detected.						
	43 2-Butanone	72	Compound Not Detected.						
	44 1,1-Dichloropropene	75	Compound Not Detected.						
	45 1-Chlorobutane	41	Compound Not Detected.						
	46 Heptane	71	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
	49 Methacrylonitrile	67	Compound Not Detected.						
	50 tert-Amyl methyl ether	73	Compound Not Detected.						
$	51 1,2-Dichloroethane-d4	65	3.752	3.752	(0.960)	229292	29.0097	29.0097	
	52 1,2-Dichloroethane	62	Compound Not Detected.						
	53 tert-Amyl Alcohol	59	Compound Not Detected.						
	54 Isobutyl alcohol	43	Compound Not Detected.						
*	55 Fluorobenzene	96	3.910	3.910	(1.000)	672056	30.0000		
	56 Diisobutylene	57	Compound Not Detected.						
	57 Trichloroethene	95	4.008	4.008	(1.025)	500549	61.6931	61.6931	
	58 Methyl cyclohexane	83	Compound Not Detected.						
	59 tert-Amyl Ethylether	59	Compound Not Detected.						
	60 Dibromomethane	93	Compound Not Detected.						
	61 1,2-Dichloropropane	63	Compound Not Detected.						
	62 Bromodichloromethane	83	Compound Not Detected.						
	63 Methyl methacrylate	41	Compound Not Detected.						
	64 1,4-Dioxane	88	Compound Not Detected.						
	65 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	66 cis-1,3-Dichloropropene	75	Compound Not Detected.						
	67 Octane	85	Compound Not Detected.						
$	68 Toluene-d8	98	4.859	4.859	(0.822)	586361	28.2349	28.2349	
	69 Toluene	92	Compound Not Detected.						
	70 Chloroacetonitrile	48	Compound Not Detected.						
	71 2-Nitropropane	41	Compound Not Detected.						
	72 1,1-Dichloro-2-Propanone	63	Compound Not Detected.						
	73 4-Methyl-2-Pentanone(MIBK)	43	Compound Not Detected.						
	74 Tetrachloroethene	164	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						

Sample Calculation

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VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ALS SDG No.: TMM-026

Instrument ID: ms15.i Calibration Date(s): 4/29/2015 4/29/2015

Heated Purge: (Y/N) N Calibration Time(s): 00:14 01:57

GC Column: RTXVMS ID: 0.25 (mm)

LAB FILE ID: RRF001 = 15042854.D RRF005 = 15042855.D RRF020 = 15042856.D RRF050 = 15042857.D

RRF100 = 15042858.D RRF200 = 15042859.D RRF00.5 = 15042853.D

COMPOUND	RRF200	RRF00.5		CT	b	m1	m2	% RSD or R^2
1,2-Dibromoethane	0.69592	0.71225		A		0.656240		6.68999
Dibromomethane	0.20007	0.23736		A		0.211440		6.04448
trans-1,4-Dichloro-2-butene	0.23849	0.21825		A		0.228040		5.54140
1,2-Dichlorobenzene	1.74836	1.94773		A		1.789330		4.36831
1,3-Dichlorobenzene	1.79377	2.01145		A		1.856620		4.50957
1,4-Dichlorobenzene	1.83952	2.34727		A		1.993090		8.56453
Dichlorodifluoromethane	2403612			Q	0.000000	0.469520	-0.013310	0.99978
1,1-Dichloroethane *		9284		Q	0.000000	0.620680	-0.003280	0.99997
1,2-Dichloroethene, Total	5255738	13212		Q	0.000000	0.463550	-0.003550	0.99988
1,2-Dichloroethane	2714256	6486		Q	0.000000	0.475490	-0.006860	0.99993
1,1-Dichloroethene **	2620130	6739		Q	0.000000	0.490760	-0.011360	0.99987
cis-1,2-Dichloroethene	0.43147	0.57670		A		0.464070		11.03542
trans-1,2-Dichloroethene	2528967	7048		Q	0.000000	0.466230	-0.009880	0.99996
Dichlorofluoromethane	3644477	11089		Q	0.000000	0.687270	-0.016520	0.99992
1,1-Dichloro-2-Propanone	219511			Q	0.000000	0.013980	0.000070	0.99975
2,2-Dichloropropane	0.38613	0.48595		A		0.393030		11.00113
1,3-Dichloropropane	3397315	5555		Q	0.000000	1.161370	0.013530	0.99994
1,2-Dichloropropane **	0.34163	0.40867		A		0.353020		7.18867
1,1-Dichloropropene	0.44411	0.50297		A		0.452680		7.04784
cis-1,3-Dichloropropene	3477211	4269		Q	0.000000	1.058830	0.033560	0.99966
trans-1,3-Dichloropropene	3165011	3134		Q	0.000000	1.001520	0.024820	0.99978
1,3-Dichloropropene, Total	6642222	7403		Q	0.000000	1.030190	0.014590	0.99971
Diisobutylene	4420772	28425		Q	0.000000	0.780670	-0.012030	0.99970
Diisopropyl ether	5952524	13952		Q	0.000000	0.983680	-0.006100	0.99986
1,4-Dioxane	595034			Q	0.000000	0.003610	0.000000	0.99962
Ethyl Acetate	0.27338	0.31342		A		0.267450		8.79804
Ethyl ether	1277641	2841		Q	0.000000	0.216960	-0.002190	0.99991
Ethyl Methacrylate	2864230	2407		Q	0.000000	0.855430	0.030170	0.99962
Ethyl tert-butyl ether	0.87688	0.92895		A		0.834360		7.56518
Ethylbenzene **	3284693	4232		Q	0.000000	1.188180	0.003340	0.99990
Freon 113	1685760	4338		Q	0.000000	0.325140	-0.008740	0.99993
Heptane	1309079	1675		Q	0.000000	0.220750	-0.001980	0.99965
Hexachlorobutadiene	1139419	1919		Q	0.000000	0.448140	-0.002800	0.99989
Hexachloroethane	1581937	1902		Q	0.000000	0.560070	0.005560	0.99966
Hexane	3204972	7826		Q	0.000000	0.576310	-0.010340	0.99996
2-Hexanone	6543772	5712		Q	0.000000	0.443010	0.001180	0.99983

CT Column contains the Calibration Type. A - Average Response Factor, L - Linear Regression, and Q - Quadratic.

SPCC Compounds (*) with required minimum RRF.

CCC Compounds (**) with required maximum %RSD.

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. APANAVAGE** **DATE:** **JUNE 15, 2015**

FROM: **MICHELLE L. ALLEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC & INORGANIC DATA VALIDATION – VOC/OVG/PCB HOMOLOGUES/ METALS/MISCELLANEOUS**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC) GROUNDWATER SAMPLING
SDG R1502645

SAMPLES: 5/Aqueous/VOC

MRC-MW-32A-041315	MRC-MW-34A-041315	MRC-MW-34B-041315
MRC-MW-34C-041315	TB-041315	

1/Aqueous/OVG/Miscellaneous

MRC-MW-34B-041315

2/Aqueous/PCB Homologues

MRC-MW-62A-041315	MRC-MW-62C-041315

3/Aqueous/Metals

MRC-MW-34B-041315	MRC-MW-62A-041315	MRC-MW-62C-041315

Overview

The sample set for LMC-MRC SDG R1502645 consisted of six (6) aqueous environmental samples and one (1) trip blank. Four (4) aqueous environmental samples and the one (1) trip blank were analyzed for Volatile Organic Compounds (VOC). One (1) aqueous environmental sample were analyzed for Volatile Organic Gases (OVG) and miscellaneous parameters (ammonia as N, carbonate alkalinity, chloride, nitrate, nitrite, orthophosphate as P, sulfate, Total Dissolved Solids (TDS), and Total Organic Carbon (TOC)). Two (2) aqueous environmental samples were analyzed for Polychlorinated Biphenyl Compound (PCB) homologues. Three (3) aqueous environmental samples were analyzed for metals. No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 13, 2015 and analyzed by ALS Environmental. All analyses were conducted in accordance with SW-846 Methods 8260C, 6010C, 6020A, and 7470A, RSK-175, EPA Methods 300.0, 365.1, and 680, Standard Methods 2320B, 2540C, and 5310B/C, USGS I-2700-85, and ASTM D6919 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, ICP/MS tuning, initial/continuing calibrations, Interference Check Sample (ICS) results, laboratory method/preparation and trip blank results, surrogate spike recoveries, laboratory control sample results, internal standard areas, serial dilution results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

No major issues were identified.

Minor

- The continuing calibration performed on 04/16/15 @ 10:58 had Percent Differences (%Ds) for 2-chloroethyl vinyl ether and bromomethane which exceeded the 20% quality control limit. All the VOC samples were affected. The non-detected results reported for these compounds in the affected samples were qualified as estimated, (UJ).

- The VOC Laboratory Control Sample (LCS) analysis had a Percent Recovery (%R) for 2-chloroethyl vinyl ether below the lower quality control limit. All VOC samples were affected. The samples were reanalyzed with an acceptable LCS %R. However, the results from the initial analyses were used in the data validation because the continuing calibration standard in the reanalyses more noncompliant %Ds, including 2-chloroethyl vinyl ether. The non-detected results reported for 2-chloroethyl vinyl ether were qualified as estimated, (UJ), in all VOC samples.

- The following analytes below were detected in the laboratory method and preparation blanks at the following maximum concentrations:

Compound/Analyte	Maximum Concentration (µg/L)	Action Level (µg/L)
Methane (1)	0.30	1.5
Tetrachlorobiphenyls (2)	0.013	0.065
Pentachlorobiphenyls (2)	0.022	0.11
Chromium (3)	0.744	3.72
Silver (3)	0.071	0.355
Thallium (3)	0.051	0.255
Molybdenum (3)	0.281	1.405
Antimony (4)	0.557	2.785
Potassium (4)	72.02	360.1
Manganese (4)	0.92	4.6
Iron (4)	18.05	90.25
Silica (5)	0.003 mg/L	0.015 mg/L
TDS (6)	6 mg/L	30 mg/L

(1) - Maximum concentration detected in the laboratory method blank RQ1503815-01, from preparation batch #440888 affecting sample MRC-MW-34B-041315.
(2) - Maximum concentration detected in the laboratory method blank RQ1503633-01, from preparation batch #233594 affecting samples MRC-MW-62A-041315 and MRC-MW-62C-041315.
(3) - Maximum concentration detected in the laboratory method blanks affecting all metals samples.
(4) - Maximum concentration detected in the initial and/or continuing calibration blanks affecting all metals samples.
(5) - Maximum concentration detected in the laboratory method blank affecting sample MRC-MW-34B-041315.
(6) - Maximum concentration detected in the laboratory method blank affecting sample MRC-MW-34B-041315.

Action levels of 5X the maximum concentration were established to evaluate for laboratory blank contamination. Dilution factor, if necessary, was taken into consideration during the application of the action level. The detected results reported for these compounds in the affected samples below the established action level were qualified as non-detected, (U).

- Detected results reported below the RL but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

The PCB homologue samples were reanalyzed due to low LCS internal standard area. The samples were re-extracted outside the 7 day holding time and reanalyzed. The internal standard areas were acceptable in the initial analyses of the PCB homologue samples, therefore, the initial analyses were used in the data validation.

The VOC Laboratory Control Sample (LCS) analysis had a Percent Recovery (%R) for dichlorodifluoromethane above the upper quality control limit. No action was taken because this compound was not detected in the associated samples.

Non-detected results were reported to the MDL.

Executive Summary

Laboratory Performance: VOC continuing calibration %Ds exceeded 20%. Contaminants were detected in the metals laboratory preparation and method blanks. PCB homologues were detected in the laboratory method blank. The VOC LCS had a low %R for 2-chloroethyl vinyl ether.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (June 2008) and the "National Functional Guidelines for Inorganic Review" (January 2010). The text of this report has been formulated to address only those areas affecting data quality.

Michelle L. Allen

Tetra Tech, Inc.
Michelle L. Allen
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-MW-34B-041315			MRC-MW-62A-041315			MRC-MW-62C-041315		
SDG: R1502645	LAB_ID	R1502645-005			R1502645-006			R1502645-004		
FRACTION: M	SAMP_DATE	4/13/2015			4/13/2015			4/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.304	U		0.342	U	A	0.304	U	
ARSENIC		0.359	U		1.2			0.359	U	
BARIUM		151			67.5			89.9		
BERYLLIUM		10.1			2.2			0.09	J	P
CADMIUM		0.36	J	P	0.021	U		0.021	U	
CHROMIUM		0.82	U	A	0.476	U	A	0.933	U	A
COBALT		138			17.4			44.5		
COPPER		41.3			0.779	J	P	0.354	J	P
IRON		119			2760			23500		
LEAD		0.271	U		0.271	U		0.271	U	
MANGANESE		511			700			1310		
MERCURY		0.04	U		0.04	U		0.04	U	
MOLYBDENUM		0.103	J	P	0.48	J	P	0.145	J	P
NICKEL		164			52.6			76.4		
POTASSIUM		7240			5450			15300		
SELENIUM		0.829	J	P	0.233	J	P	0.177	U	
SILVER		0.062	U		0.062	U		0.062	U	
THALLIUM		0.279	J	P	0.024	U		0.056	U	A
VANADIUM		0.935	J	P	0.432	U		0.432	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-34B-041315		
SDG: R1502645	LAB_ID	R1502645-005		
FRACTION: MISC	SAMP_DATE	4/13/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	MG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
AMMONIA-N		0.034	J	P
CARBONATE ALKALINITY		0.3	U	
CHLORIDE		186		
NITRATE-N		0.5	J	P
NITRITE-N		0.3	U	
ORTHOPHOSPHATE-P		0.003	J	P
SILICON DIOXIDE		8.5		
SULFATE		46.9		
TOTAL DISSOLVED SOLIDS		338		
TOTAL ORGANIC CARBON		1.5		

PROJ_NO: 06247	NSAMPLE	MRC-MW-34B-041315		
SDG: R1502645	LAB_ID	R1502645-005		
FRACTION: OVG	SAMP_DATE	4/13/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ETHANE		0.38	J	P
ETHENE		0.11	U	
METHANE		91		

PROJ_NO: 06247	NSAMPLE	MRC-MW-62A-041315			MRC-MW-62C-041315		
SDG: R1502645	LAB_ID	R1502645-006			R1502645-004		
FRACTION: PCB	SAMP_DATE	4/13/2015			4/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
DECACHLOROBIPHENYL		0.018	U		0.018	U	
DICHLOROBIPHENYLS		0.0044	U		0.0044	U	
HEPTACHLOROBIPHENYLS		0.011	U		0.011	U	
HEXACHLOROBIPHENYL		0.01	U		0.01	U	
MONOCHLOROBIPHENYLS		0.0017	U		0.0017	U	
NONACHLOROBIPHENYLS		0.019	U		0.019	U	
PENTACHLOROBIPHENYLS		0.0088	U		0.0088	U	
TETRACHLOROBIPHENYLS		0.014	U	A	0.0054	U	
TOTAL OCTACHLOROBIPHENYLS		0.0084	U		0.0084	U	
TOTAL TRICHLOROBIPHENYLS		0.0048	J	P	0.0034	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-32A-041315			MRC-MW-34A-041315			MRC-MW-34B-041315			MRC-MW-34C-041315		
SDG: R1502645	LAB_ID	R1502645-002			R1502645-003			R1502645-005			R1502645-007		
FRACTION: OV	SAMP_DATE	4/13/2015			4/13/2015			4/13/2015			4/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,1-TRICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,1,2,2-TETRACHLOROETHANE		0.25	U		0.25	U		0.25	U		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.2	U		0.2	U		0.76	J	P	0.2	U	
1,1-DICHLOROETHENE		0.57	U		0.57	U		0.57	U		0.57	U	
1,1-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2,3-TRICHLOROPROPANE		0.7	U		0.7	U		0.7	U		0.7	U	
1,2,4-TRICHLOROBENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
1,2,4-TRIMETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.74	U		0.74	U		0.74	U		0.74	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
1,2-DICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,2-DICHLOROPROPANE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
2,2-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
2-BUTANONE		0.81	U		0.81	U		0.81	U		0.81	U	
2-CHLOROETHYL VINYL ETHER		0.44	UJ	CE	0.44	UJ	CE	0.44	UJ	CE	0.44	UJ	CE
2-CHLOROTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
2-HEXANONE		1.7	U		1.7	U		1.7	U		1.7	U	
4-CHLOROTOLUENE		0.24	U		0.24	U		0.24	U		0.24	U	
4-ISOPROPYLTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
4-METHYL-2-PENTANONE		0.67	U		0.67	U		0.67	U		0.67	U	
ACETONE		1.3	U		1.3	U		1.3	U		1.3	U	
BENZENE		0.2	U		0.2	U		0.21	J	P	0.2	U	
BROMOBENZENE		0.28	U		0.28	U		0.28	U		0.28	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMOFORM		0.42	U		0.42	U		0.42	U		0.42	U	
BROMOMETHANE		0.29	UJ	C	0.29	UJ	C	0.29	UJ	C	0.29	UJ	C
CARBON DISULFIDE		0.22	U		0.22	U		0.22	U		0.22	U	

PROJ_NO: 06247	NSAMPLE	TB-041315		
SDG: R1502645	LAB_ID	R1502645-001		
FRACTION: OV	SAMP_DATE	4/13/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.22	U	
1,1,1-TRICHLOROETHANE		0.36	U	
1,1,2,2-TETRACHLOROETHANE		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U	
1,1-DICHLOROETHANE		0.2	U	
1,1-DICHLOROETHENE		0.57	U	
1,1-DICHLOROPROPENE		0.29	U	
1,2,3-TRICHLOROBENZENE		0.82	U	
1,2,3-TRICHLOROPROPANE		0.7	U	
1,2,4-TRICHLOROBENZENE		0.23	U	
1,2,4-TRIMETHYLBENZENE		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.74	U	
1,2-DIBROMOETHANE		0.24	U	
1,2-DICHLOROBENZENE		0.21	U	
1,2-DICHLOROETHANE		0.36	U	
1,2-DICHLOROPROPANE		0.2	U	
1,3-DICHLOROBENZENE		0.2	U	
1,3-DICHLOROPROPANE		0.27	U	
1,4-DICHLOROBENZENE		0.2	U	
2,2-DICHLOROPROPANE		0.27	U	
2-BUTANONE		0.81	U	
2-CHLOROETHYL VINYL ETHER		0.44	UJ	CE
2-CHLOROTOLUENE		0.2	U	
2-HEXANONE		1.7	U	
4-CHLOROTOLUENE		0.24	U	
4-ISOPROPYLTOLUENE		0.2	U	
4-METHYL-2-PENTANONE		0.67	U	
ACETONE		1.3	U	
BENZENE		0.2	U	
BROMOBENZENE		0.28	U	
BROMOCHLOROMETHANE		0.32	U	
BROMODICHLOROMETHANE		0.32	U	
BROMOFORM		0.42	U	
BROMOMETHANE		0.29	UJ	C
CARBON DISULFIDE		0.22	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-32A-041315			MRC-MW-34A-041315			MRC-MW-34B-041315			MRC-MW-34C-041315		
SDG: R1502645	LAB_ID	R1502645-002			R1502645-003			R1502645-005			R1502645-007		
FRACTION: OV	SAMP_DATE	4/13/2015			4/13/2015			4/13/2015			4/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.45	U		0.45	U		2.9			0.45	U	
CHLOROBENZENE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLORODIBROMOMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
CHLOROFORM		0.25	U		0.25	U		1.2			0.25	U	
CHLOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		13			0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U		0.24	U		0.24	U		0.24	U	
DIBROMOMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U		0.46	U		0.46	U		0.46	U	
DIISOPROPYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
HEXACHLOROBUTADIENE		0.62	U		0.62	U		0.62	U		0.62	U	
ISOPROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
M+P-XYLENES		0.33	U		0.33	U		0.33	U		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U		0.29	U		19			0.29	U	
METHYLENE CHLORIDE		0.6	U		0.6	U		0.6	U		0.6	U	
NAPHTHALENE		0.2	U		0.2	U		0.2	U		0.2	U	
N-BUTYLBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
N-PROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
O-XYLENE		0.2	U		0.2	U		0.2	U		0.2	U	
SEC-BUTYLBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
STYRENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-BUTYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	U		11	U		11	U		11	U	
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
TOTAL XYLENES		0.53	U		0.53	U		0.53	U		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U		0.33	U		0.94	J	P	0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE		0.56	J	P	14			15			0.22	U	
TRICHLOROFLUOROMETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
VINYL ACETATE		1.1	U		1.1	U		1.1	U		1.1	U	

PROJ_NO: 06247	NSAMPLE	TB-041315		
SDG: R1502645	LAB_ID	R1502645-001		
FRACTION: OV	SAMP_DATE	4/13/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
CARBON TETRACHLORIDE		0.45	U	
CHLOROBENZENE		0.29	U	
CHLORODIBROMOMETHANE		0.31	U	
CHLOROETHANE		0.24	U	
CHLOROFORM		0.25	U	
CHLOROMETHANE		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U	
DIBROMOMETHANE		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U	
DIISOPROPYL ETHER		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U	
ETHYLBENZENE		0.2	U	
HEXACHLOROBUTADIENE		0.62	U	
ISOPROPYLBENZENE		0.2	U	
M+P-XYLENES		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U	
METHYLENE CHLORIDE		0.6	U	
NAPHTHALENE		0.2	U	
N-BUTYLBENZENE		0.21	U	
N-PROPYLBENZENE		0.2	U	
O-XYLENE		0.2	U	
SEC-BUTYLBENZENE		0.27	U	
STYRENE		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U	
TERT-BUTYLBENZENE		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	U	
TETRACHLOROETHENE		0.3	U	
TOLUENE		0.2	U	
TOTAL XYLENES		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U	
TRICHLOROETHENE		0.22	U	
TRICHLOROFLUOROMETHANE		0.2	U	
VINYL ACETATE		1.1	U	

PROJ_NO: 06247	NSAMPLE	MRC-MW-32A-041315			MRC-MW-34A-041315			MRC-MW-34B-041315			MRC-MW-34C-041315		
SDG: R1502645	LAB_ID	R1502645-002			R1502645-003			R1502645-005			R1502645-007		
FRACTION: OV	SAMP_DATE	4/13/2015			4/13/2015			4/13/2015			4/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
VINYL CHLORIDE		0.32	U		0.32	U		2.2			0.32	U	

PROJ_NO: 06247	NSAMPLE	TB-041315		
SDG: R1502645	LAB_ID	R1502645-001		
FRACTION: OV	SAMP_DATE	4/13/2015		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
VINYL CHLORIDE		0.32	U	

Appendix B

Results as Reported by the Laboratory

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:51
Sample Name:	MRC-MW-32A-041315	**Units:**	µg/L
Lab Code:	R1502645-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1136.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:51
Sample Name:	MRC-MW-32A-041315	**Units:**	µg/L
Lab Code:	R1502645-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1136.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.56**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:51
Sample Name:	MRC-MW-32A-041315	**Units:**	Percent
Lab Code:	R1502645-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1136.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	104	85-122	4/16/15 16:51	
Dibromofluoromethane	105	89-119	4/16/15 16:51	
Toluene-d8	110	87-121	4/16/15 16:51	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:03
Sample Name:	MRC-MW-32A-041315	**Units:**	µg/L
Lab Code:	R1502645-002	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1205.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:03
Sample Name:	MRC-MW-32A-041315	**Units:**	µg/L
Lab Code:	R1502645-002	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1205.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.42**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 0951
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:03
Sample Name:	MRC-MW-32A-041315	**Units:**	Percent
Lab Code:	R1502645-002	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1205.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	105	85-122	4/20/15 17:03	
Dibromofluoromethane	103	89-119	4/20/15 17:03	
Toluene-d8	103	87-121	4/20/15 17:03	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 17:27
Sample Name:	MRC-MW-34A-041315	**Units:**	µg/L
Lab Code:	R1502645-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1137.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 17:27
Sample Name:	MRC-MW-34A-041315	**Units:**	µg/L
Lab Code:	R1502645-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1137.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**14**		1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 17:27
Sample Name:	MRC-MW-34A-041315	**Units:**	Percent
Lab Code:	R1502645-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1137.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	106	85-122	4/16/15 17:27	
Dibromofluoromethane	106	89-119	4/16/15 17:27	
Toluene-d8	110	87-121	4/16/15 17:27	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:39
Sample Name:	MRC-MW-34A-041315	**Units:**	µg/L
Lab Code:	R1502645-003	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1206.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:39
Sample Name:	MRC-MW-34A-041315	**Units:**	µg/L
Lab Code:	R1502645-003	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1206.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**16**		1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1102
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 17:39
Sample Name:	MRC-MW-34A-041315	**Units:**	Percent
Lab Code:	R1502645-003	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1206.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	107	85-122	4/20/15 17:39	
Dibromofluoromethane	105	89-119	4/20/15 17:39	
Toluene-d8	104	87-121	4/20/15 17:39	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:02
Sample Name:	MRC-MW-34B-041315	**Units:**	µg/L
Lab Code:	R1502645-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1138.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	**0.76**	**J**	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	**0.21**	**J**	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:02
Sample Name:	MRC-MW-34B-041315	**Units:**	µg/L
Lab Code:	R1502645-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1138.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	**2.9**		1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	**1.2**		1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	**19**		1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**15**		1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	**2.2**		1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	**13**		1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	**0.94**	J	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:02
Sample Name:	MRC-MW-34B-041315	**Units:**	Percent
Lab Code:	R1502645-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1138.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	106	85-122	4/16/15 18:02	
Dibromofluoromethane	104	89-119	4/16/15 18:02	
Toluene-d8	111	87-121	4/16/15 18:02	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:14
Sample Name:	MRC-MW-34B-041315	**Units:**	µg/L
Lab Code:	R1502645-005	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1207.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	**0.80**	J	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	**0.25**	J	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:14
Sample Name:	MRC-MW-34B-041315	**Units:**	µg/L
Lab Code:	R1502645-005	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1207.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	**3.4**		1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	**1.3**		1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	**22**		1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**16**		1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	**2.4**		1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	**14**		1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	**1.1**		1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:14
Sample Name:	MRC-MW-34B-041315	**Units:**	Percent
Lab Code:	R1502645-005	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1207.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	109	85-122	4/20/15 18:14	
Dibromofluoromethane	106	89-119	4/20/15 18:14	
Toluene-d8	106	87-121	4/20/15 18:14	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:37
Sample Name:	MRC-MW-34C-041315	**Units:**	µg/L
Lab Code:	R1502645-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1139.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:37
Sample Name:	MRC-MW-34C-041315	**Units:**	µg/L
Lab Code:	R1502645-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1139.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 18:37
Sample Name:	MRC-MW-34C-041315	**Units:**	Percent
Lab Code:	R1502645-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1139.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	106	85-122	4/16/15 18:37	
Dibromofluoromethane	107	89-119	4/16/15 18:37	
Toluene-d8	110	87-121	4/16/15 18:37	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:50
Sample Name:	MRC-MW-34C-041315	**Units:**	µg/L
Lab Code:	R1502645-007	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1208.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:50
Sample Name:	MRC-MW-34C-041315	**Units:**	µg/L
Lab Code:	R1502645-007	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1208.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1546
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 18:50
Sample Name:	MRC-MW-34C-041315	**Units:**	Percent
Lab Code:	R1502645-007	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1208.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	110	85-122	4/20/15 18:50	
Dibromofluoromethane	106	89-119	4/20/15 18:50	
Toluene-d8	104	87-121	4/20/15 18:50	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:16
Sample Name:	TB-041315	**Units:**	µg/L
Lab Code:	R1502645-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1135.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:16
Sample Name:	TB-041315	**Units:**	µg/L
Lab Code:	R1502645-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1135.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/16/15 16:16
Sample Name:	TB-041315	**Units:**	Percent
Lab Code:	R1502645-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1135.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	104	85-122	4/16/15 16:16	
Dibromofluoromethane	105	89-119	4/16/15 16:16	
Toluene-d8	110	87-121	4/16/15 16:16	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 16:27
Sample Name:	TB-041315	**Units:**	µg/L
Lab Code:	R1502645-001	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1204.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 16:27
Sample Name:	TB-041315	**Units:**	µg/L
Lab Code:	R1502645-001	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1204.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/20/15 16:27
Sample Name:	TB-041315	**Units:**	Percent
Lab Code:	R1502645-001	**Basis:**	NA
Run Type:	Reanalysis		

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1204.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	105	85-122	4/20/15 16:27	
Dibromofluoromethane	105	89-119	4/20/15 16:27	
Toluene-d8	97	87-121	4/20/15 16:27	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Analyzed:	4/17/15 12:15
Sample Name:	MRC-MW-34B-041315	**Units:**	µg/L
Lab Code:	R1502645-005	**Basis:**	NA

Dissolved Gases by GC/FID

Analytical Method:	RSK 175	**Analysis Lot:**	440888
Data File Name:	1017.run	**Instrument Name:**	R-GC-02
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
74-84-0	Ethane	**0.38**	J	1.0	0.20	
74-85-1	Ethene	0.11	U	1.0	0.11	
74-82-8	Methane	**91**		1.0	0.21	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1435
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Extracted:	4/15/15
		Date Analyzed:	4/20/15 17:35
Sample Name:	MRC-MW-62A-041315	**Units:**	µg/L
Lab Code:	R1502645-006	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441283
Prep Method:	EPA 3510C	**Extraction Lot:**	233594
Data File Name:	I:\ACQUDATA\5973B\DATA\042015\DK887.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0017	U	0.0048	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0048	0.0044	
25323-68-6	Trichlorobiphenyls, Total	**0.0048**	J	0.0048	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.014**	B	0.0095	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0088	U	0.0095	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	83	63-119	4/20/15 17:35	
4,4'-DDT	67	62-181	4/20/15 17:35	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	4/13/15 1435
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Extracted:	4/22/15
		Date Analyzed:	4/23/15 11:48
Sample Name:	MRC-MW-62A-041315	**Units:**	µg/L
Lab Code:	R1502645-006	**Basis:**	NA
Run Type:	Reanalysis		

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441750
Prep Method:	EPA 3510C	**Extraction Lot:**	234094
Data File Name:	I:\ACQUDATA\5973B\DATA\042315\DK899.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0017	U	0.0047	0.0017	*
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0047	0.0044	*
25323-68-6	Trichlorobiphenyls, Total	0.0034	U	0.0047	0.0034	*
26914-33-0	Tetrachlorobiphenyls, Total	0.0054	U	0.0094	0.0054	*
25429-29-2	Pentachlorobiphenyls, Total	0.0088	U	0.0094	0.0088	*
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	*
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.014	0.011	*
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.014	0.0084	*
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	*
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.024	0.018	*

Surrogate Name	%Rec		Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	127	*	63-119	4/23/15 11:48	
4,4'-DDT	77		62-181	4/23/15 11:48	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/1121C06247	**Date Collected:**	4/13/15 1315
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Extracted:	4/15/15
		Date Analyzed:	4/20/15 17:06
Sample Name:	MRC-MW-62C-041315	**Units:**	µg/L
Lab Code:	R1502645-004	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441283
Prep Method:	EPA 3510C	**Extraction Lot:**	233594
Data File Name:	I:\ACQUDATA\5973B\DATA\042015\DK886.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0017	U	0.0048	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0048	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0034	U	0.0048	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.0054	U	0.0095	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0088	U	0.0095	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	90	63-119	4/20/15 17:06	
4,4'-DDT	72	62-181	4/20/15 17:06	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/1121C06247	**Date Collected:**	4/13/15 1315
Sample Matrix:	Water	**Date Received:**	4/14/15
		Date Extracted:	4/22/15
		Date Analyzed:	4/23/15 11:19
Sample Name:	MRC-MW-62C-041315	**Units:**	µg/L
Lab Code:	R1502645-004	**Basis:**	NA
Run Type:	Reanalysis		

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441750
Prep Method:	EPA 3510C	**Extraction Lot:**	234094
Data File Name:	I:\ACQUDATA\5973B\DATA\042315\DK898.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total'	0.0017	U	0.0047	0.0017	*
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0047	0.0044	*
25323-68-6	Trichlorobiphenyls, Total	0.0034	U	0.0047	0.0034	*
26914-33-0	Tetrachlorobiphenyls, Total	0.0054	U	0.0094	0.0054	*
25429-29-2	Pentachlorobiphenyls, Total	0.0088	U	0.0094	0.0088	*
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	*
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.014	0.011	*
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.014	0.0084	*
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	*
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.024	0.018	*

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	85	63-119	4/23/15 11:19	
4,4'-DDT	77	62-181	4/23/15 11:19	

ALS Environmental

METALS

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-34B-041315

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Matrix (soil/water): WATER Lab Sample ID: R1502645-005

Level (low/med): LOW Date Received: 4/14/2015

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	0.304	U		MS
7440-38-2	Arsenic	0.359	U		MS
7440-39-3	Barium	151			MS
7440-41-7	Beryllium	10.1			MS
7440-43-9	Cadmium	0.360	J		MS
7440-47-3	Chromium	0.820	J		MS
7440-48-4	Cobalt	138			MS
7440-50-8	Copper	41.3			MS
7439-89-6	Iron	119			P
7440-09-7	Potassium	7240			P
7439-92-1	Lead	0.271	U		MS
7439-96-5	Manganese	511			P
7439-97-6	Mercury	0.040	U		CV
7440-02-0	Nickel	164			MS
7782-49-2	Selenium	0.829	J		MS
7440-22-4	Silver	0.062	U		MS
7440-28-0	Thallium	0.279	J		MS
7440-62-2	Vanadium	0.935	J		MS
7439-98-7	Molybdenum	0.103	J		MS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: _____

ALS Environmental

METALS

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-62A-041315

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Matrix (soil/water): WATER Lab Sample ID: R1502645-006

Level (low/med): LOW Date Received: 4/14/2015

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	0.342	J		MS
7440-38-2	Arsenic	1.2			MS
7440-39-3	Barium	67.5			MS
7440-41-7	Beryllium	2.2			MS
7440-43-9	Cadmium	0.021	U		MS
7440-47-3	Chromium	0.476	J		MS
7440-48-4	Cobalt	17.4			MS
7440-50-8	Copper	0.779	J		MS
7439-89-6	Iron	2760			P
7440-09-7	Potassium	5450			P
7439-92-1	Lead	0.271	U		MS
7439-96-5	Manganese	700			P
7439-97-6	Mercury	0.040	U		CV
7440-02-0	Nickel	52.6			MS
7782-49-2	Selenium	0.233	J		MS
7440-22-4	Silver	0.062	U		MS
7440-28-0	Thallium	0.024	U		MS
7440-62-2	Vanadium	0.432	U		MS
7439-98-7	Molybdenum	0.480	J		MS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: _____

ALS Environmental

METALS

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MRC-MW-62C-041315

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Matrix (soil/water): WATER Lab Sample ID: R1502645-004

Level (low/med): LOW Date Received: 4/14/2015

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	0.304	U		MS
7440-38-2	Arsenic	0.359	U		MS
7440-39-3	Barium	89.9			MS
7440-41-7	Beryllium	0.090	J		MS
7440-43-9	Cadmium	0.021	U		MS
7440-47-3	Chromium	0.933	J		MS
7440-48-4	Cobalt	44.5			MS
7440-50-8	Copper	0.354	J		MS
7439-89-6	Iron	23500			P
7440-09-7	Potassium	15300			P
7439-92-1	Lead	0.271	U		MS
7439-96-5	Manganese	1310			P
7439-97-6	Mercury	0.040	U		CV
7440-02-0	Nickel	76.4			MS
7782-49-2	Selenium	0.177	U		MS
7440-22-4	Silver	0.062	U		MS
7440-28-0	Thallium	0.056	J		MS
7440-62-2	Vanadium	0.432	U		MS
7439-98-7	Molybdenum	0.145	J		MS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/1121C06247	**Date Collected:**	4/13/15 1441
Sample Matrix:	Water	**Date Received:**	4/14/15
Sample Name:	MRC-MW-34B-041315		
Lab Code:	R1502645-005	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	0.3	U	mg/L	2.0	0.3	1	NA	4/21/15 09:06	
Ammonia as Nitrogen, undistilled	ASTM D6919-09	**0.034**	J	mg/L	0.050	0.006	10	NA	4/16/15 12:47	
Carbon, Total Organic (TOC)	SM 5310B/C-2000(201	**1.5**		mg/L	1.0	0.4	1	NA	4/20/15 21:47	
Chloride	300.0	**186**		mg/L	8.0	1.2	40	NA	4/20/15 05:39	
Nitrate as Nitrogen	300.0	**0.5**	J	mg/L	1.0	0.2	10	NA	4/14/15 13:19	
Nitrite as Nitrogen	300.0	0.3	U	mg/L	1.0	0.3	10	NA	4/14/15 13:19	
Orthophosphate as Phosphorus	365.1	**0.003**	J	mg/L	0.010	0.002	1	NA	4/14/15 22:19	
Silica, Dissolved as SiO2	USGS I-2700-85	**8.50**		mg/L	0.20	0.06	20	NA	4/27/15 16:57	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	**338**		mg/L	10	5	1	NA	4/14/15 09:39	
Sulfate	300.0	**46.9**		mg/L	2.0	1.9	10	NA	4/14/15 13:19	

Appendix C

Support Documentation

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

24901

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name: MRC-GW 2015 Sampling	Project Number: 112IC06247
Project Manager: Tony Apuzzaggio	Report CC:
Company/Address: Tetra Tech INC 20251 Century Blvd STE 200 Germantown, MD 20874	
Phone #: 301 528-3021	Email:
Sampler's Signature: Walt Payon	Sampler's Printed Name: Walt Payon

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	PCBs	BK-175	Alkalinity	Ammonia	TOC	Cl04	Chemistry Soil 9056 TDS 5%	REMARKS/ ALTERNATE DESCRIPTION
TB-041315		4-13-15	—	GW	2	X														
MRC-MW-32A-041315			0951		3	X														
MRC-MW-34A-041315			1102		3	X														
MRC-MW-62C-041315			1315		3						X		X							
MRC-MW-34B-041315			1441		12	X					X			X	X	X	X	X	X	# NAA #
MRC-MW-62A-041315			1435		3						X		X							
MRC-MW-34C-041315			1546		3	X														

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS
Metals

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day

REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
_____ I. Results Only
_____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data

Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Walt Payon	Signature:	Signature	Signature	Signature	
Printed Name: Walt Payon	Printed Name:	Printed Name	Printed Name	Printed Name	
Firm: TT MS	Firm: ALS	Firm	Firm	Firm	
Date/Time: 4-13-15	Date/Time: 4/14/15 0945	Date/Time	Date/Time	Date/Time	

R1502645 7
Tetra Tech NUS,Inc.
Middle River- Lockheed Martin Corp

Distribution: White - Lab Copy; Yellow - Return to Originator

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R1502645 7
Tetra Tech NUS,Inc.
Middle River- Lockheed Martin Corp

Cooler Receipt and Preservation Check Form

Project/Client Tetra Tech Folder Number 15-2645

Cooler received on 4/14/15 by: @

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y (N) NA
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) (CLIENT)
4	Circle: (**Wet Ice**) **Dry Ice Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 4/14/15 Time: 1010 ID: IR#3 (IR#5) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	2.8						
Correction Factor (°C)	-1.6						
Corrected Temp (°C)	1.2						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by @ on 4/14/15 at 1012
5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: Thrist

Cooler Breakdown: Date: 4/14/15 Time: 1122 by: JFS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

pH	Reagent	Yes	No	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3	✓		8D0261410	4/16				
≤2	H_2SO_4	✓		WC140151E	3/16				
<4	$NaHSO_4$								
Residual Chlorine (-)	For CN Phenol and 522			If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol).					
	$Na_2S_2O_3$	-	-						
	ZnAcetate	-	-						
	HCl	**	**	944050	3/16				

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: 122214-2AAW, 010515-1BU, 4-258-004, 012615-2AAU, 100614-1BMC,
Other Comments:

PC Secondary Review: Thrist

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS ASP/CLP Batching Form/Login Sheet

Client Proj #: 112IC06247	Batch Complete: Yes	Date Revised:
Submission: R1502645	Diskette Requested: No	Date Due: 5/5/15
Client: Tetra Tech GEO	Date: 5/14/15	Protocol: SW846
Client Rep: TCHRIST	Custody Seal: Present/Absent:	Shipping No.:
Project: MRC-GW 2015 Sampling	Chain of Custody: Present/Absent:	SDG #:

CAS Job #	Client/EPA ID	Matrix	Requested Parameters	Date Sampled	Date Received	pH (Solids)	% Solids	Remarks Sample Condition
R1502645-001	TB-041315	Water	8260C	4/13/15	4/14/15			
R1502645-001.R01	TB-041315	Water	8260C	4/13/15	4/14/15			
R1502645-002	MRC-MW-32A-041315	Water	8260C	4/13/15	4/14/15			
R1502645-002.R01	MRC-MW-32A-041315	Water	8260C	4/13/15	4/14/15			
R1502645-003	MRC-MW-34A-041315	Water	8260C	4/13/15	4/14/15			
R1502645-003.R01	MRC-MW-34A-041315	Water	8260C	4/13/15	4/14/15			
R1502645-004	MRC-MW-62C-041315	Water	7470A, 6020A, 680, 6010C	4/13/15	4/14/15			
R1502645-004.R01	MRC-MW-62C-041315	Water	680	4/13/15	4/14/15			
R1502645-005	MRC-MW-34B-041315	Water	6020A, 8260C, SM 2320 B-1997(2011), SM 2540 C-1997(2011), SM 5310B/C-2000(2011), ASTM D6919-09, 6010C, USGS I-2700-85, 6850, 365.1, RSK 175, 300.0, 7470A	4/13/15	4/14/15			
R1502645-005.R01	MRC-MW-34B-041315	Water	8260C	4/13/15	4/14/15			
R1502645-006	MRC-MW-62A-041315	Water	7470A, 680, 6010C, 6020A	4/13/15	4/14/15			
R1502645-006.R01	MRC-MW-62A-041315	Water	680	4/13/15	4/14/15			
R1502645-007	MRC-MW-34C-041315	Water	8260C	4/13/15	4/14/15			
R1502645-007.R01	MRC-MW-34C-041315	Water	8260C	4/13/15	4/14/15			

00004

Folder Comments: TB& QC-NC; 1 invoice per month; 2CD's; **MDL U**

ALS ENVIRONMENTAL

Client:	Tetra Tech	**Service Request No.:**	R1502645
Project:	Middle River	**Date Received:**	4/14/15
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results and Laboratory Control Samples (LCS) recoveries have been reported with each analytical test.

Sample Receipt

Seven water samples were received for analysis at ALS-Environmental on 4/14/15. The samples were received in good condition consistent with the accompanying chain of custody form enclosed. The samples were received at 1.2°C within the 0-6°C temperature guidelines.

Wet Chemistry

The Method Blanks were free of contamination except for low level detections for Silica and TDS. No data was affected.

Site QC was not requested on these samples.

The Continuing Calibration Blanks for Ammonia (CCB1 to CCB6), Chloride (CCB5), Orthophosphate (CCB1, CCB2) and Silica (CCB2, CCB3) contained low level hits and have been flagged with a "J". No data was affected.

No other analytical or quality control problems were encountered during analysis.

Metals

All Method Blanks were free of contamination above the Method Reporting Limit (MRL).

Site QC was not requested for these samples.

No other analytical or quality control problems were encountered during analysis.

Volatile Organics-5030C/8260C

The Continuing Calibration Verification (CCV) standard exceeded 20% difference for 2-Chloroethyl vinyl ether and Bromomethane on 4/16/15 and2-Chloroethyl vinyl ether, 2-Hexanone and Bromoform on 4/20/15. All detected concentrations for this compound in samples associated with this CCV should be considered as estimated. Please note: The 2-Chloroethyl vinyl ether exceeded 40% on 4/16/15 and all affected samples were repeated under a compliant CCV.

The Method Blank was free of contamination.

The Laboratory Control Sample from 4/16/16 was outside of the control limits low for 2-Chloroethyl vinyl ether and has been flagged with a "*". All affected data has been repeated under a compliant LCS.

No other analytical or quality control problems were encountered during analysis.

Volatile Organics-RSK

The Method Blank contained a low level hit of Methane and has been flagged with a "J". No data was affected as hits in the samples were greater than 10 times the hit in the method blank or not detected.

No other analytical or quality control problems were encountered during analysis.

Extractable Organics- 680

All Internal Standards (IS) were acceptable except on the LCS which was outside limits low. The samples were re-extracted out of holding time (as noted by the "*") and reanalyzed under a compliant IS and both sets of data have been reported.

All surrogate standard recoveries except gamma-GHC was outside limits high on MRC-MW-62A-041315RE and outside limits low on the 04/15/15 LCS and has been flagged with an "*". All affected data was re-extracted and reanalyzed..

The Method blanks were free of contamination except the 04/15/15 blank had low level detections for Tetrachlorobiphenyls and Pentachlorobiphenyls. All affected data has been flagged with a "B".

No other analytical or quality control problems were encountered during analysis.

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

NELAP Accredited	Maine ID #NY0032	New Hampshire ID # 294100 A/B
Connecticut ID # PH0556	Nebraska Accredited	
Delaware Accredited	Nevada ID # NY-00032	North Carolina #676
DoD ELAP #65817	New Jersey ID # NY004	Pennsylvania ID# 68-786
Florida ID # E87674	New York ID # 10145	Rhode Island ID # 158
Illinois ID #200047		Virginia #460167

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/16/15 10:58

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\041615\W1126.D\
Instrument ID: R-MS-07
Analytical Method: 8260C

Lab Code: RQ1503745-02
Analysis Lot: 440776
Signal ID:

		1,4-Dichlorobenzene-d4		1,4-Difluorobenzene		Chlorobenzene-d5	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	647,805	20.62	1,451,540	10.93	1,311,373	16.03
	Upper Limit ==>	1,295,610	21.12	2,903,080	11.43	2,622,746	16.53
	Lower Limit ==>	323,903	20.12	725,770	10.43	655,687	15.53
	ICAL Result ==>	820,886	20.61	1,763,697	10.92	1,662,584	16.02
Associated Analyses							
Lab Control Sample	RQ1503745-03	652,370	20.62	1,495,720	10.93	1,322,449	16.03
Method Blank	RQ1503745-04	632,191	20.62	1,470,928	10.93	1,309,843	16.03
TB-041315	R1502645-001	607,961	20.64	1,435,373	10.95	1,271,220	16.04
MRC-MW-32A-041315	R1502645-002	609,179	20.63	1,459,595	10.95	1,274,342	16.05
MRC-MW-34A-041315	R1502645-003	617,044	20.64	1,438,033	10.94	1,273,762	16.05
MRC-MW-34B-041315	R1502645-005	609,879	20.64	1,447,285	10.95	1,261,359	16.05
MRC-MW-34C-041315	R1502645-007	617,595	20.64	1,444,170	10.94	1,277,339	16.05

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/16/15 10:58

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\041615\W1126.D\
Instrument ID: R-MS-07
Analytical Method: 8260C

Lab Code: RQ1503745-02
Analysis Lot: 440776
Signal ID:

		Pentafluorobenzene	
		Area	**RT**
	Results ==>	950,807	9.74
	Upper Limit ==>	1,901,614	10.24
	Lower Limit ==>	475,404	9.24
	ICAL Result ==>	1,078,672	9.74
Associated Analyses			
Lab Control Sample	RQ1503745-03	969,605	9.75
Method Blank	RQ1503745-04	966,028	9.75
TB-041315	R1502645-001	934,473	9.76
MRC-MW-32A-041315	R1502645-002	948,236	9.76
MRC-MW-34A-041315	R1502645-003	938,777	9.76
MRC-MW-34B-041315	R1502645-005	933,860	9.77
MRC-MW-34C-041315	R1502645-007	934,099	9.76

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15 11:07

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\042015\W1195.D\
Instrument ID: R-MS-07
Analytical Method: 8260C

Lab Code: RQ1503891-02
Analysis Lot: 441201
Signal ID:

		1,4-Dichlorobenzene-d4		1,4-Difluorobenzene		Chlorobenzene-d5	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	684,764	20.71	1,406,443	11.01	1,347,806	16.11
	Upper Limit ==>	1,369,528	21.21	2,812,886	11.51	2,695,612	16.61
	Lower Limit ==>	342,382	20.21	703,222	10.51	673,903	15.61
	ICAL Result ==>	820,886	20.61	1,763,697	10.92	1,662,584	16.02
Associated Analyses							
Lab Control Sample	RQ1503891-03	681,094	20.71	1,466,948	11.01	1,376,531	16.11
Method Blank	RQ1503891-04	672,653	20.71	1,432,149	11.01	1,350,542	16.12
TB-041315RE	R1502645-001	637,063	20.72	1,427,461	11.02	1,340,982	16.13
MRC-MW-32A-041315RE	R1502645-002	635,034	20.72	1,425,711	11.02	1,343,885	16.14
MRC-MW-34A-041315RE	R1502645-003	640,516	20.71	1,383,965	11.02	1,309,268	16.13
MRC-MW-34B-041315RE	R1502645-005	646,600	20.72	1,381,746	11.03	1,305,424	16.13
MRC-MW-34C-041315RE	R1502645-007	639,600	20.72	1,384,598	11.03	1,299,563	16.13

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15 11:07

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\042015\W1195.D\
Instrument ID: R-MS-07
Analytical Method: 8260C

Lab Code: RQ1503891-02
Analysis Lot: 441201
Signal ID:

		Pentafluorobenzene	
		Area	**RT**
	Results ==>	906,759	9.82
	Upper Limit ==>	1,813,518	10.32
	Lower Limit ==>	453,380	9.32
	ICAL Result ==>	1,078,672	9.74
Associated Analyses			
Lab Control Sample	RQ1503891-03	913,452	9.82
Method Blank	RQ1503891-04	910,894	9.82
TB-041315RE	R1502645-001	891,419	9.83
MRC-MW-32A-041315RE	R1502645-002	892,199	9.84
MRC-MW-34A-041315RE	R1502645-003	862,817	9.83
MRC-MW-34B-041315RE	R1502645-005	883,149	9.83
MRC-MW-34C-041315RE	R1502645-007	869,293	9.83

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Analyzed:**	4/16/15 12:44
Sample Matrix:	Water		

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	R-MS-07
Lab Code:	RQ1503745-04	**File ID:**	I:\ACQUDATA\MSVOA7\DATA\041615\W1129.D\
Analytical Method:	8260C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1503745-03	I:\ACQUDATA\MSVOA7\DATA\041615\W1127.D\	4/16/15 11:33
TB-041315	R1502645-001	I:\ACQUDATA\MSVOA7\DATA\041615\W1135.D\	4/16/15 16:16
MRC-MW-32A-041315	R1502645-002	I:\ACQUDATA\MSVOA7\DATA\041615\W1136.D\	4/16/15 16:51
MRC-MW-34A-041315	R1502645-003	I:\ACQUDATA\MSVOA7\DATA\041615\W1137.D\	4/16/15 17:27
MRC-MW-34B-041315	R1502645-005	I:\ACQUDATA\MSVOA7\DATA\041615\W1138.D\	4/16/15 18:02
MRC-MW-34C-041315	R1502645-007	I:\ACQUDATA\MSVOA7\DATA\041615\W1139.D\	4/16/15 18:37

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/16/15 12:44
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503745-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1129.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/16/15 12:44
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503745-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1129.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/16/15 12:44
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	RQ1503745-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	440776
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\041615\W1129.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	105	85-122	4/16/15 12:44	
Dibromofluoromethane	106	89-119	4/16/15 12:44	
Toluene-d8	110	87-121	4/16/15 12:44	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/16/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 440776

Analyte Name	Lab Control Sample RQ1503745-03 Result	Spike Amount	% Rec		% Rec Limits
1,1,1,2-Tetrachloroethane	19.5	20.0	98		79 - 119
1,1,1-Trichloroethane (TCA)	17.3	20.0	87		71 - 123
1,1,2,2-Tetrachloroethane	19.0	20.0	95		74 - 127
1,1,2-Trichlorotrifluoroethane	16.2	20.0	81		64 - 136
1,1-Dichloroethane (1,1-DCA)	17.4	20.0	87		76 - 128
1,1-Dichloroethene (1,1-DCE)	16.2	20.0	81		74 - 135
1,1-Dichloropropene	17.2	20.0	86		74 - 136
1,2,3-Trichlorobenzene	17.1	20.0	86		60 - 144
1,2,3-Trichloropropane	17.4	20.0	87		68 - 136
1,2,4-Trichlorobenzene	18.0	20.0	90		60 - 141
1,2,4-Trimethylbenzene	17.4	20.0	87		76 - 126
1,2-Dibromo-3-chloropropane (DBCP)	18.3	20.0	92		69 - 135
1,2-Dibromoethane	18.9	20.0	95		81 - 123
1,2-Dichlorobenzene	17.9	20.0	90		80 - 119
1,2-Dichloroethane	18.9	20.0	94		72 - 130
1,2-Dichloropropane	18.5	20.0	92		80 - 119
1,3-Dichlorobenzene	18.0	20.0	90		79 - 121
1,3-Dichloropropane	18.9	20.0	95		82 - 116
1,4-Dichlorobenzene	18.0	20.0	90		79 - 119
2,2-Dichloropropane	15.6	20.0	78		59 - 135
2-Butanone (MEK)	17.1	20.0	85		66 - 129
2-Chloroethyl Vinyl Ether	7.50	20.0	38	*	58 - 139
2-Chlorotoluene	18.3	20.0	91		71 - 125
2-Hexanone	19.6	20.0	98		61 - 131
tert-Butyl Alcohol	401	400	100		63 - 142
4-Chlorotoluene	18.6	20.0	93		73 - 127
4-Isopropyltoluene	17.3	20.0	86		74 - 130
4-Methyl-2-pentanone	19.3	20.0	96		68 - 129
Acetone	17.2	20.0	86		51 - 146
Benzene	17.9	20.0	89		76 - 118
Bromobenzene	19.0	20.0	95		79 - 121
Bromochloromethane	16.5	20.0	83		81 - 126
Bromodichloromethane	19.5	20.0	97		79 - 122

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/16/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 440776

Lab Control Sample
RQ1503745-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bromoform	20.9	20.0	104	65 - 138
Bromomethane	14.5	20.0	73	41 - 159
Carbon Disulfide	15.2	20.0	76	63 - 141
Carbon Tetrachloride	17.8	20.0	89	66 - 128
Chlorobenzene	19.4	20.0	97	80 - 121
Chloroethane	14.8	20.0	74	71 - 128
Chloroform	17.7	20.0	89	76 - 120
Chloromethane	17.6	20.0	88	64 - 140
Dibromochloromethane	19.5	20.0	98	79 - 125
Dibromomethane	18.2	20.0	91	79 - 120
Dichlorodifluoromethane (CFC 12)	16.0	20.0	80	60 - 150
Methylene Chloride	16.3	20.0	82	73 - 122
Diisopropyl Ether	16.0	20.0	80	76 - 131
Ethyl tert-Butyl Ether	15.8	20.0	79	77 - 126
Ethylbenzene	17.8	20.0	89	76 - 120
Hexachlorobutadiene	19.1	20.0	96	57 - 147
Isopropylbenzene (Cumene)	18.3	20.0	92	76 - 126
Methyl tert-Butyl Ether	17.2	20.0	86	73 - 131
Naphthalene	17.5	20.0	88	73 - 133
Styrene	18.9	20.0	94	81 - 122
Tetrachloroethene (PCE)	18.6	20.0	93	69 - 124
Toluene	19.3	20.0	96	77 - 120
Trichloroethene (TCE)	18.0	20.0	90	76 - 123
Trichlorofluoromethane (CFC 11)	16.4	20.0	82	69 - 130
Vinyl Acetate	18.7	20.0	93	43 - 165
Vinyl Chloride	17.8	20.0	89	69 - 136
Xylenes, Total	56.0	60.0	93	78 - 121
cis-1,2-Dichloroethene	17.3	20.0	87	80 - 121
cis-1,3-Dichloropropene	17.9	20.0	89	77 - 125
m,p-Xylenes	37.6	40.0	94	78 - 123
n-Butylbenzene	16.5	20.0	83	69 - 135
n-Propylbenzene	17.6	20.0	88	76 - 125
o-Xylene	18.4	20.0	92	77 - 131

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/16/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 440776

Lab Control Sample
RQ1503745-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
sec-Butylbenzene	16.8	20.0	84	72 - 130
tert-Amyl Methyl Ether	17.7	20.0	88	76 - 123
tert-Butylbenzene	16.9	20.0	84	73 - 124
trans-1,2-Dichloroethene	16.5	20.0	82	78 - 124
trans-1,3-Dichloropropene	18.7	20.0	93	72 - 123

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Analyzed:**	4/20/15 12:54
Sample Matrix:	Water		

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	R-MS-07
Lab Code:	RQ1503891-04	**File ID:**	I:\ACQUDATA\MSVOA7\DATA\042015\W1198.D\
Analytical Method:	8260C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1503891-03	I:\ACQUDATA\MSVOA7\DATA\042015\W1196.D\	4/20/15 11:42
TB-041315RE	R1502645-001	I:\ACQUDATA\MSVOA7\DATA\042015\W1204.D\	4/20/15 16:27
MRC-MW-32A-041315RE	R1502645-002	I:\ACQUDATA\MSVOA7\DATA\042015\W1205.D\	4/20/15 17:03
MRC-MW-34A-041315RE	R1502645-003	I:\ACQUDATA\MSVOA7\DATA\042015\W1206.D\	4/20/15 17:39
MRC-MW-34B-041315RE	R1502645-005	I:\ACQUDATA\MSVOA7\DATA\042015\W1207.D\	4/20/15 18:14
MRC-MW-34C-041315RE	R1502645-007	I:\ACQUDATA\MSVOA7\DATA\042015\W1208.D\	4/20/15 18:50

Reanalyses not used.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/20/15 12:54
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503891-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1198.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	0.22	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	0.36	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	0.25	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	0.31	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.20	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.57	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	0.29	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	0.82	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	0.70	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	0.23	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	0.20	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.74	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	0.24	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	0.21	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	0.36	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	0.20	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	0.20	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	0.27	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	0.20	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	0.27	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	0.81	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	0.44	U	1.0	0.44	
95-49-8	2-Chlorotoluene	0.20	U	1.0	0.20	
591-78-6	2-Hexanone	1.7	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	11	U	40	11	
106-43-4	4-Chlorotoluene	0.24	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	0.20	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	0.67	U	5.0	0.67	
67-64-1	Acetone	1.3	U	5.0	1.3	
71-43-2	Benzene	0.20	U	1.0	0.20	
108-86-1	Bromobenzene	0.28	U	1.0	0.28	
74-97-5	Bromochloromethane	0.32	U	1.0	0.32	
75-27-4	Bromodichloromethane	0.32	U	1.0	0.32	
75-25-2	Bromoform	0.42	U	1.0	0.42	
74-83-9	Bromomethane	0.29	U	1.0	0.29	
75-15-0	Carbon Disulfide	0.22	U	1.0	0.22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/20/15 12:54
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503891-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1198.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
56-23-5	Carbon Tetrachloride	0.45	U	1.0	0.45	
108-90-7	Chlorobenzene	0.29	U	1.0	0.29	
75-00-3	Chloroethane	0.24	U	1.0	0.24	
67-66-3	Chloroform	0.25	U	1.0	0.25	
74-87-3	Chloromethane	0.21	U	1.0	0.21	
124-48-1	Dibromochloromethane	0.31	U	1.0	0.31	
74-95-3	Dibromomethane	0.32	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	0.46	U	1.0	0.46	
75-09-2	Methylene Chloride	0.60	U	1.0	0.60	
108-20-3	Diisopropyl Ether	0.20	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	0.20	U	1.0	0.20	
100-41-4	Ethylbenzene	0.20	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	0.62	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	0.20	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	0.29	U	1.0	0.29	
91-20-3	Naphthalene	0.20	U	1.0	0.20	
100-42-5	Styrene	0.20	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.30	U	1.0	0.30	
108-88-3	Toluene	0.20	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.22	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	0.20	U	1.0	0.20	
108-05-4	Vinyl Acetate	1.1	U	2.0	1.1	
75-01-4	Vinyl Chloride	0.32	U	1.0	0.32	
1330-20-7	Xylenes, Total	0.53	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	0.30	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	0.24	U	1.0	0.24	
179601-23-1	m,p-Xylenes	0.33	U	2.0	0.33	
104-51-8	n-Butylbenzene	0.21	U	1.0	0.21	
103-65-1	n-Propylbenzene	0.20	U	1.0	0.20	
95-47-6	o-Xylene	0.20	U	1.0	0.20	
135-98-8	sec-Butylbenzene	0.27	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	0.20	U	1.0	0.20	
98-06-6	tert-Butylbenzene	0.20	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	0.33	U	1.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	0.20	U	1.0	0.20	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/20/15 12:54
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	RQ1503891-04	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	441201
Data File Name:	I:\ACQUDATA\MSVOA7\DATA\042015\W1198.D\	**Instrument Name:**	R-MS-07
		Dilution Factor:	1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	107	85-122	4/20/15 12:54	
Dibromofluoromethane	107	89-119	4/20/15 12:54	
Toluene-d8	106	87-121	4/20/15 12:54	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/20/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 441201

Lab Control Sample
RQ1503891-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	21.6	20.0	108	79 - 119
1,1,1-Trichloroethane (TCA)	21.0	20.0	105	71 - 123
1,1,2,2-Tetrachloroethane	20.4	20.0	102	74 - 127
1,1,2-Trichlorotrifluoroethane	20.4	20.0	102	64 - 136
1,1-Dichloroethane (1,1-DCA)	20.5	20.0	103	76 - 128
1,1-Dichloroethene (1,1-DCE)	19.5	20.0	97	74 - 135
1,1-Dichloropropene	20.4	20.0	102	74 - 136
1,2,3-Trichlorobenzene	20.2	20.0	101	60 - 144
1,2,3-Trichloropropane	19.3	20.0	96	68 - 136
1,2,4-Trichlorobenzene	21.4	20.0	107	60 - 141
1,2,4-Trimethylbenzene	20.5	20.0	103	76 - 126
1,2-Dibromo-3-chloropropane (DBCP)	22.1	20.0	110	69 - 135
1,2-Dibromoethane	20.8	20.0	104	81 - 123
1,2-Dichlorobenzene	20.3	20.0	101	80 - 119
1,2-Dichloroethane	21.3	20.0	106	72 - 130
1,2-Dichloropropane	20.9	20.0	104	80 - 119
1,3-Dichlorobenzene	20.3	20.0	102	79 - 121
1,3-Dichloropropane	20.9	20.0	104	82 - 116
1,4-Dichlorobenzene	20.4	20.0	102	79 - 119
2,2-Dichloropropane	20.4	20.0	102	59 - 135
2-Butanone (MEK)	20.7	20.0	103	66 - 129
2-Chloroethyl Vinyl Ether	12.6	20.0	63	58 - 139
2-Chlorotoluene	20.5	20.0	103	71 - 125
2-Hexanone	21.2	20.0	106	61 - 131
tert-Butyl Alcohol	477	400	119	63 - 142
4-Chlorotoluene	20.3	20.0	102	73 - 127
4-Isopropyltoluene	20.7	20.0	104	74 - 130
4-Methyl-2-pentanone	21.1	20.0	105	68 - 129
Acetone	21.5	20.0	107	51 - 146
Benzene	20.7	20.0	103	76 - 118
Bromobenzene	21.0	20.0	105	79 - 121
Bromochloromethane	19.8	20.0	99	81 - 126
Bromodichloromethane	21.9	20.0	110	79 - 122

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/20/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 441201

Analyte Name	Lab Control Sample RQ1503891-03 Result	Spike Amount	% Rec	% Rec Limits
Bromoform	22.8	20.0	114	65 - 138
Bromomethane	16.9	20.0	85	41 - 159
Carbon Disulfide	19.2	20.0	96	63 - 141
Carbon Tetrachloride	20.6	20.0	103	66 - 128
Chlorobenzene	20.8	20.0	104	80 - 121
Chloroethane	17.6	20.0	88	71 - 128
Chloroform	21.4	20.0	107	76 - 120
Chloromethane	21.5	20.0	107	64 - 140
Dibromochloromethane	21.2	20.0	106	79 - 125
Dibromomethane	20.7	20.0	104	79 - 120
Dichlorodifluoromethane (CFC 12)	19.2	20.0	96	60 - 150
Methylene Chloride	19.5	20.0	98	73 - 122
Ethylbenzene	20.0	20.0	100	76 - 120
Hexachlorobutadiene	22.4	20.0	112	57 - 147
Isopropylbenzene (Cumene)	21.0	20.0	105	76 - 126
Methyl tert-Butyl Ether	21.3	20.0	107	73 - 131
Naphthalene	20.4	20.0	102	73 - 133
Styrene	20.8	20.0	104	81 - 122
Tetrachloroethene (PCE)	21.0	20.0	105	69 - 124
Toluene	21.4	20.0	107	77 - 120
Trichloroethene (TCE)	21.1	20.0	105	76 - 123
Trichlorofluoromethane (CFC 11)	19.6	20.0	98	69 - 130
Vinyl Acetate	22.9	20.0	114	43 - 165
Vinyl Chloride	21.2	20.0	106	69 - 136
Xylenes, Total	62.5	60.0	104	78 - 121
cis-1,2-Dichloroethene	20.5	20.0	102	80 - 121
cis-1,3-Dichloropropene	21.0	20.0	105	77 - 125
m,p-Xylenes	42.1	40.0	105	78 - 123
n-Butylbenzene	19.9	20.0	100	69 - 135
n-Propylbenzene	20.9	20.0	105	76 - 125
o-Xylene	20.4	20.0	102	77 - 131
sec-Butylbenzene	20.5	20.0	102	72 - 130
tert-Butylbenzene	20.0	20.0	100	73 - 124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/20/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 441201

Analyte Name	Lab Control Sample RQ1503891-03 Result	Spike Amount	% Rec	% Rec Limits
trans-1,2-Dichloroethene	20.3	20.0	101	78 - 124
trans-1,3-Dichloropropene	20.4	20.0	102	72 - 123

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/1121C06247

Service Request: R1502645
Date Analyzed: 03/23/15 13:30

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\msvoa7\data\032315\W0604.D\
Instrument ID: R-MS-07

Analytical Method: 8260C
Analysis Lot:

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.5	44515	Pass
75	95	30	60	43.2	103831	Pass
95	95	100	100	100.0	240296	Pass
96	95	5	9	6.8	16459	Pass
173	174	0	2	0.2	442	Pass
174	95	50	120	79.2	190403	Pass
175	174	5	9	7.5	14297	Pass
176	174	95	101	97.9	186347	Pass
177	176	5	9	6.5	12104	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Initial CalibrationICAL	0.5 ppb	I:\ACQUDATA\msvoa7\data\032315\W0608A.D\	03/23/15 16:25	
Initial CalibrationICAL	1.0 ppb	I:\ACQUDATA\msvoa7\data\032315\W0608B.D\	03/23/15 17:00	
Initial CalibrationICAL	2.0 ppb	I:\ACQUDATA\msvoa7\data\032315\W0609.D\	03/23/15 17:35	
Initial CalibrationICAL	5.0 ppb	I:\ACQUDATA\msvoa7\data\032315\W0610.D\	03/23/15 18:10	
Initial CalibrationICAL	20 ppb	I:\ACQUDATA\msvoa7\data\032315\W0611.D\	03/23/15 18:45	
Initial CalibrationICAL	50 ppb	I:\ACQUDATA\msvoa7\data\032315\W0612.D\	03/23/15 19:20	
Initial CalibrationICAL	100 ppb	I:\ACQUDATA\msvoa7\data\032315\W0613.D\	03/23/15 19:55	
Initial CalibrationICAL	150 ppb	I:\ACQUDATA\msvoa7\data\032315\W0614.D\	03/23/15 20:30	
Initial CalibrationICAL	200 ppb	I:\ACQUDATA\msvoa7\data\032315\W0615.D\	03/23/15 21:04	

Initial Calibration - Summary Report

KB 3/24/15

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
8260 waters WO32315 **Column Name:** 1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
1,1,1,2-Tetrachloroethane	T	Average RF			0.3310	<=20	4.7
1,1,1-Trichloroethane (TCA)	T	Average RF		0.100	0.7468	<=20	5.3
1,1,2,2-Tetrachloroethane	T	Average RF		0.300	0.6550	<=20	3.3
1,1,2-Trichloroethane	T	Average RF		0.100	0.2517	<=20	10.8
1,1,2-Trichlorotrifluoroethane	T	Average RF		0.100	0.5077	<=20	7.5
1,1-Dichloroethane (1,1-DCA)	T	Average RF		0.200	0.9472	<=20	7.5
1,1-Dichloroethene (1,1-DCE)	T	Average RF		0.100	0.4486	<=20	6.5
1,1-Dichloropropene	T	Average RF			0.4497	<=20	8.2
1,2,3-Trichlorobenzene	T	Average RF			0.6710	<=20	6.5
1,2,3-Trichloropropane	T	Average RF			0.2049	<=20	10.3
1,2,4-Trichlorobenzene	T	Average RF		0.200	0.7965	<=20	4.1
1,2,4-Trimethylbenzene	T	Average RF			2.302	<=20	6.7
1,2-Dibromo-3-chloropropane (DBCP)	T	Average RF		0.050	0.1375	<=20	12.7
1,2-Dibromoethane	T	Average RF		0.100	0.2834	<=20	3.2
1,2-Dichloro-1,1,2-trifluoroethane (CFC 123:	T	Average RF			0.6648	<=20	12.7
1,2-Dichlorobenzene	T	Average RF		0.400	1.331	<=20	3.4
1,2-Dichloroethane	T	Average RF		0.100	0.4110	<=20	6.1
1,2-Dichloropropane	T	Average RF		0.100	0.3601	<=20	10.1
1,3,5-Trichlorobenzene	T	Average RF			0.9036	<=20	4.9
1,3,5-Trimethylbenzene	T	Average RF			2.260	<=20	8.0
1,3-Dichlorobenzene	T	Average RF		0.600	1.400	<=20	5.6
1,3-Dichloropropane	T	Average RF			0.5273	<=20	6.5
1,4-Dichlorobenzene	T	Average RF		0.500	1.406	<=20	8.0
1,4-Dioxane	T	Average RF			0.002198	<=20	6.7
1-Butanol	T	Average RF			0.006019	<=20	13.8
1-Chloro-4-(trifluoromethyl)benzene	T	Average RF			0.4550	<=20	6.4
2,2-Dichloro-1,1,1-trifluoroethane (CFC 123	T	Average RF			0.6990	<=20	7.8
2,2-Dichloropropane	T	Average RF			0.7405	<=20	9.1
2,3,6-Trichlorotoluene	T	Average RF			0.3685	<=20	5.5
2,4,5-Trichlorotoluene	T	Average RF			0.4380	<=20	10.2
2,4-, 2,5-, and 2,6-Dichlorotoluene Coelution	T	Average RF			1.090	<=20	6.5
2,4-Dichlorobenzotrifluoride	T	Average RF			0.6114	<=20	5.3
2,5-Dichlorobenzotrifluoride	T	Average RF			0.7111	<=20	4.4
2-Bromo-2-chloro-1,1,1-trifluoroethane	T	Average RF				<=20	
2-Butanone (MEK)	T	Average RF		0.05	0.2444	<=20	4.8
2-Chloro-1,3-butadiene	T	Average RF			1.048	<=20	4.3
2-Chlorobenzotrifluoride	T	Average RF			0.4797	<=20	8.4
2-Chloroethyl Vinyl Ether	T	Average RF			0.1921	<=20	9.7
2-Chlorotoluene	T	Average RF			2.204	<=20	7.8
2-Hexanone	T	Average RF		0.05	0.2032	<=20	4.4
2-Methyl-1-propanol	T	Average RF			0.01141	<=20	4.0
2-Methyl-2-propanol	T	Average RF			0.03751	<=20	4.0
2-Nitropropane	T	Average RF			0.06768	<=20	11.8
2-Propanol	T	Average RF			0.02550	<=20	8.2
3,4- and 2,3-Dichlorotoluene Coelution	T	Average RF			1.128	<=20	3.0
3,4-Dichlorobenzotrifluoride	T	Average RF			0.7174	<=20	5.9
3-Chloro-1-propene	T	Average RF			0.9611	<=20	7.1
3-Chlorobenzotrifluoride	T	Average RF			0.5031	<=20	5.0
3-Chlorotoluene	T	Average RF			2.200	<=20	5.4
4-Chlorotoluene	T	Average RF			2.230	<=20	5.4
4-Isopropyltoluene	T	Average RF			2.345	<=20	7.4
4-Methyl-2-pentanone	T	Average RF		0.05	0.3050	<=20	2.9

00106

Initial Calibration - Summary Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Column Name:	1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
Acetone	T	Average RF		0.05	0.1875	<=20	17.0
Acetonitrile	T	Average RF			0.04791	<=20	17.7
Acrolein	T	Average RF			0.07979	<=20	10.6
Acrylonitrile	T	Average RF			0.1599	<=20	5.7
Benzene	T	Average RF		0.500	1.296	<=20	11.0
Bromobenzene	T	Average RF			0.7603	<=20	4.7
Bromochloromethane	T	Average RF			0.2905	<=20	8.0
Bromodichloromethane	T	Average RF		0.200	0.4349	<=20	4.3
Bromoform	T	Average RF		0.100	0.1936	<=20	5.1
Bromomethane	T	Average RF		0.100	0.4482	<=20	7.2
Carbon Disulfide	T	Average RF		0.100	2.068	<=20	4.4
Carbon Tetrachloride	T	Average RF		0.05	0.3939	<=20	6.7
Chlorobenzene	T	Average RF		0.500	0.8920	<=20	6.0
Chloroethane	T	Average RF		0.100	0.4643	<=20	13.0
Chloroform	T	Average RF		0.200	0.9297	<=20	8.4
Chloromethane	T	Average RF		0.100	0.6798	<=20	12.8
Cyclohexane	T	Average RF		0.100	0.6065	<=20	7.1
Cyclohexanone	T	Average RF			0.03309	<=20	11.6
Dibromochloromethane	T	Average RF		0.100	0.3549	<=20	3.0
Dibromomethane	T	Average RF			0.1845	<=20	5.1
Dichlorodifluoromethane (CFC 12)	T	Average RF		0.100	0.6344	<=20	6.2
Dichlorofluoromethane (CFC 21)	T	Average RF			1.140	<=20	5.8
Dichloromethane	T	Average RF		0.100	0.5742	<=20	12.0
Diethyl Ether	T	Average RF			0.4445	<=20	7.9
Diisopropyl Ether	T	Average RF			2.212	<=20	11.0
Ethyl Methacrylate	T	Average RF			0.3908	<=20	4.2
Ethyl tert-Butyl Ether	T	Average RF			1.835	<=20	6.5
Ethylbenzene	T	Average RF		0.100	1.508	<=20	9.4
Hexachlorobutadiene	T	Average RF			0.3233	<=20	7.9
Iodomethane	T	Average RF			0.8298	<=20	3.6
Isopropylbenzene (Cumene)	T	Average RF		0.100	1.394	<=20	8.7
Methacrylonitrile	T	Average RF			0.1874	<=20	11.1
Methyl Acetate	T	Average RF		0.100	0.3520	<=20	8.8
Methyl Methacrylate	T	Average RF			0.07400	<=20	5.6
Methyl tert-Butyl Ether	T	Average RF		0.100	1.363	<=20	5.2
Methylcyclohexane	T	Average RF		0.100	0.4776	<=20	10.9
Naphthalene	T	Average RF			1.706	<=20	3.7
Nitrobenzene	T	Average RF				<=20	
Propionitrile	T	Average RF			0.05590	<=20	14.0
Styrene	T	Average RF		0.300	0.9616	<=20	9.5
Tetrachloroethene (PCE)	T	Average RF		0.200	0.3710	<=20	7.3
Tetrahydrofuran (THF)	T	Average RF			0.1314	<=20	13.6
Toluene	T	Average RF		0.400	1.349	<=20	9.5
Trichloroethene (TCE)	T	Average RF		0.200	0.3299	<=20	5.8
Trichlorofluoromethane (CFC 11)	T	Average RF		0.100	0.7383	<=20	8.7
Vinyl Acetate	T	Average RF			0.07523	<=20	11.0
Vinyl Chloride	T	Average RF		0.100	0.6123	<=20	5.2
cis-1,2-Dichloroethene	T	Average RF		0.100	0.5712	<=20	7.4
cis-1,3-Dichloropropene	T	Average RF		0.200	0.5432	<=20	5.6
m,p-Xylenes	T	Average RF		0.100	0.5588	<=20	10.0
n-Butyl Acetate	T	Average RF			0.5050	<=20	4.9
n-Butylbenzene	T	Average RF			2.192	<=20	7.0

00107

Initial Calibration - Summary Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Column Name:	1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
n-Heptane	T	Average RF			0.4636	<=20	10.4
n-Propylbenzene	T	Average RF			3.476	<=20	7.0
o-Xylene	T	Average RF		0.300	0.5537	<=20	10.0
sec-Butylbenzene	T	Average RF			2.815	<=20	6.0
tert-Amyl Methyl Ether	T	Average RF			0.8825	<=20	6.7
tert-Butylbenzene	T	Average RF			1.987	<=20	6.8
trans-1,2-Dichloroethene	T	Average RF		0.100	0.5329	<=20	8.8
trans-1,3-Dichloropropene	T	Average RF		0.100	0.4833	<=20	4.7
trans-1,4-Dichloro-2-butene	T	Average RF			0.1606	<=20	14.1
1,2-Dichloroethane-d4	S	Average RF			0.3245	<=20	4.9
4-Bromofluorobenzene	S	Average RF			0.4721	<=20	6.1
Dibromofluoromethane	S	Average RF			0.3219	<=20	3.8
Toluene-d8	S	Average RF			1.086	<=20	5.9

KR 3/29/15

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
8260 Waters W032315 **Signal ID:** I

#	Lab Code	Sample Name	File Location	Acquisition Date
01	RC1500031-01	0.5ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0608A.D	3/23/15 16:25
02	RC1500031-02	1.0ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0608B.D	3/23/15 17:00
03	RC1500031-03	2.0ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0609.D	3/23/15 17:35
04	RC1500031-04	5.0ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0610.D	3/23/15 18:10
05	RC1500031-05	20ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0611.D	3/23/15 18:45
06	RC1500031-06	50ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0612.D	3/23/15 19:20
07	RC1500031-07	100ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0613.D	3/23/15 19:55
08	RC1500031-08	150ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0614.D	3/23/15 20:30
09	RC1500031-09	200ppb	I:\ACQUDATA\MSVOA7\DATA\032315\W0615.D	3/23/15 21:04

Analyte **Curve Fit** **Weighting**

1,1,1,2-Tetrachloroethane Average RF RSD = 4.7 Average RF = 0.3310

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3287	02	1.000	0.3460	03	2.000	0.3213	04	5.000	0.3573
05	20.000	0.3129	06	50.000	0.3469	07	100.000	0.3248	08	150.000	0.3266
09	200.000	0.3147									

1,1,1-Trichloroethane (TCA) Average RF RSD = 5.3 Average RF = 0.7468

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7308	02	1.000	0.7961	03	2.000	0.7888	04	5.000	0.7598
05	20.000	0.6758	06	50.000	0.7863	07	100.000	0.7324	08	150.000	0.7324
09	200.000	0.7187									

1,1,2,2-Tetrachloroethane Average RF RSD = 3.3 Average RF = 0.6550

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6593	02	1.000	0.6490	03	2.000	0.6129	04	5.000	0.6470
05	20.000	0.6349	06	50.000	0.6775	07	100.000	0.6660	08	150.000	0.6785
09	200.000	0.6702									

1,1,2-Trichloroethane Average RF RSD = 10.8 Average RF = 0.2517

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3100	02	1.000	0.2571	03	2.000	0.2365	04	5.000	0.2790
05	20.000	0.2394	06	50.000	0.2503	07	100.000	0.2348	08	150.000	0.2337
09	200.000	0.2247									

1,1,2-Trichlorotrifluoroethane Average RF RSD = 7.5 Average RF = 0.5077

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5295	02	1.000	0.5768	03	2.000	0.5165	04	5.000	0.5337
05	20.000	0.4587	06	50.000	0.5204	07	100.000	0.4918	08	150.000	0.4771
09	200.000	0.4646									

1,1-Dichloroethane (1,1-DCA) Average RF RSD = 7.5 Average RF = 0.9472

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.066	02	1.000	1.015	03	2.000	0.9730	04	5.000	0.9925
05	20.000	0.8589	06	50.000	0.9596	07	100.000	0.8931	08	150.000	0.8908
09	200.000	0.8753									

1,1-Dichloroethene (1,1-DCE) Average RF RSD = 6.5 Average RF = 0.4486

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4582	02	1.000	0.4669	03	2.000	0.4998	04	5.000	0.4646
05	20.000	0.4007	06	50.000	0.4558	07	100.000	0.4405	08	150.000	0.4252
09	200.000	0.4262									

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte	Curve Fit	Weighting									
1,1-Dichloropropene	Average RF			RSD = 8.2		Average RF = 0.4497					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4900	02	1.000	0.4395	03	2.000	0.4932	04	5.000	0.4996
05	20.000	0.4037	06	50.000	0.4582	07	100.000	0.4234	08	150.000	0.4233
09	200.000	0.4167									
1,2,3-Trichlorobenzene	Average RF			RSD = 6.5		Average RF = 0.6710					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7302	02	1.000	0.6078	03	2.000	0.6539	04	5.000	0.6522
05	20.000	0.6076	06	50.000	0.7019	07	100.000	0.6828	08	150.000	0.7082
09	200.000	0.6943									
1,2,3-Trichloropropane	Average RF			RSD = 10.3		Average RF = 0.2049					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.2416	02	1.000	0.2375	03	2.000	0.2042	04	5.000	0.2101
05	20.000	0.1910	06	50.000	0.1899	07	100.000	0.1882	08	150.000	0.1919
09	200.000	0.1897									
1,2,4-Trichlorobenzene	Average RF			RSD = 4.1		Average RF = 0.7965					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7817	02	1.000	0.7739	03	2.000	0.7650	04	5.000	0.8064
05	20.000	0.7446	06	50.000	0.8422	07	100.000	0.7999	08	150.000	0.8314
09	200.000	0.8239									
1,2,4-Trimethylbenzene	Average RF			RSD = 6.7		Average RF = 2.302					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.573	02	1.000	2.334	03	2.000	2.407	04	5.000	2.433
05	20.000	2.135	06	50.000	2.314	07	100.000	2.201	08	150.000	2.219
09	200.000	2.101									
1,2-Dibromo-3-chloropropane (DBCP)	Average RF			RSD = 12.7		Average RF = 0.1375					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.000	0.1772	03	2.000	0.1275	04	5.000	0.1347	05	20.000	0.1179
06	50.000	0.1318	07	100.000	0.1322	08	150.000	0.1377	09	200.000	0.1411
1,2-Dibromoethane	Average RF			RSD = 3.2		Average RF = 0.2834					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.2951	02	1.000	0.2770	03	2.000	0.2879	04	5.000	0.2888
05	20.000	0.2687	06	50.000	0.2955	07	100.000	0.2774	08	150.000	0.2816
09	200.000	0.2782									
1,2-Dichloro-1,1,2-trifluoroethane (CFC	Average RF			RSD = 12.7		Average RF = 0.6648					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8173	02	1.000	0.7122	03	2.000	0.6981	04	5.000	0.7351
05	20.000	0.6413	06	50.000	0.6533	07	100.000	0.5980	08	150.000	0.5688
09	200.000	0.5591									
1,2-Dichlorobenzene	Average RF			RSD = 3.4		Average RF = 1.331					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.371	02	1.000	1.369	03	2.000	1.354	04	5.000	1.387
05	20.000	1.254	06	50.000	1.343	07	100.000	1.293	08	150.000	1.323
09	200.000	1.285									

00110

Initial Calibration - Detailed Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Signal ID:	1

Analyte **Curve Fit** **Weighting**

1,2-Dichloroethane Average RF RSD = 6.1 Average RF = 0.4110

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4126	02	1.000	0.4388	03	2.000	0.4222	04	5.000	0.4515
05	20.000	0.3906	06	50.000	0.4240	07	100.000	0.3910	08	150.000	0.3888
09	200.000	0.3799									

1,2-Dichloroethane-d4 Average RF RSD = 4.9 Average RF = 0.3245

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	50.000	0.3352	03	60.000	0.3388	04	70.000	0.3387	05	100.000	0.3229
07	125.000	0.3092	08	150.000	0.3022						

1,2-Dichloropropane Average RF RSD = 10.1 Average RF = 0.3601

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4126	02	1.000	0.4004	03	2.000	0.3801	04	5.000	0.3852
05	20.000	0.3375	06	50.000	0.3609	07	100.000	0.3274	08	150.000	0.3237
09	200.000	0.3128									

1,3,5-Trichlorobenzene Average RF RSD = 4.9 Average RF = 0.9036

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.9948	02	1.000	0.8763	03	2.000	0.8821	04	5.000	0.9268
05	20.000	0.8373	06	50.000	0.9034	07	100.000	0.9288	08	150.000	0.9050
09	200.000	0.8775									

1,3,5-Trimethylbenzene Average RF RSD = 8.0 Average RF = 2.260

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.398	02	1.000	2.504	03	2.000	2.439	04	5.000	2.403
05	20.000	2.053	06	50.000	2.249	07	100.000	2.143	08	150.000	2.112
09	200.000	2.036									

1,3-Dichlorobenzene Average RF RSD = 5.6 Average RF = 1.400

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.446	02	1.000	1.467	03	2.000	1.484	04	5.000	1.502
05	20.000	1.280	06	50.000	1.398	07	100.000	1.344	08	150.000	1.365
09	200.000	1.318									

1,3-Dichloropropane Average RF RSD = 6.5 Average RF = 0.5273

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5573	02	1.000	0.5810	03	2.000	0.5549	04	5.000	0.5460
05	20.000	0.5060	06	50.000	0.5292	07	100.000	0.4941	08	150.000	0.4960
09	200.000	0.4815									

1,4-Dichlorobenzene Average RF RSD = 8.0 Average RF = 1.406

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.610	02	1.000	1.522	03	2.000	1.440	04	5.000	1.470
05	20.000	1.294	06	50.000	1.385	07	100.000	1.329	08	150.000	1.327
09	200.000	1.277									

1,4-Dioxane Average RF RSD = 6.7 Average RF = 0.002198

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	40.000	0.002438	04	100.000	0.002217	05	400.000	0.002354	06	1000.000	0.002110
07	2000.000	0.002108	08	3000.000	0.002032	09	4000.000	0.002128			

1-Butanol Average RF RSD = 13.8 Average RF = 0.006019

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	50.000	0.004129	03	100.000	0.005774	04	250.000	0.005848	05	1000.000	0.006320
06	2500.000	0.006668	07	5000.000	0.006566	08	7500.000	0.006418	09	10000.000	0.006429

00111

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte	Curve Fit	Weighting									
1-Chloro-4-(trifluoromethyl)benzene	Average RF			RSD = 6.4		Average RF = 0.4550					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5079	02	1.000	0.4712	03	2.000	0.4541	04	5.000	0.4804
05	20.000	0.4227	06	50.000	0.4492	07	100.000	0.4599	08	150.000	0.4335
09	200.000	0.4159									
2,2-Dichloro-1,1,1-trifluoroethane (CFC	Average RF			RSD = 7.8		Average RF = 0.6990					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7386	02	1.000	0.7279	03	2.000	0.7691	04	5.000	0.7656
05	20.000	0.6643	06	50.000	0.7061	07	100.000	0.6424	08	150.000	0.6487
09	200.000	0.6280									
2,2-Dichloropropane	Average RF			RSD = 9.1		Average RF = 0.7405					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8341	02	1.000	0.8421	03	2.000	0.7664	04	5.000	0.7532
05	20.000	0.6399	06	50.000	0.7444	07	100.000	0.7056	08	150.000	0.6979
09	200.000	0.6808									
2,3,6-Trichlorotoluene	Average RF			RSD = 5.5		Average RF = 0.3685					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3976	02	1.000	0.3604	03	2.000	0.3592	04	5.000	0.3600
05	20.000	0.3303	06	50.000	0.3733	07	100.000	0.3929	08	150.000	0.3798
09	200.000	0.3628									
2,4,5-Trichlorotoluene	Average RF			RSD = 10.2		Average RF = 0.4380					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5317	02	1.000	0.4609	03	2.000	0.3921	04	5.000	0.4052
05	20.000	0.3822	06	50.000	0.4401	07	100.000	0.4573	08	150.000	0.4412
09	200.000	0.4309									
2,4-, 2,5-, and 2,6-Dichlorotoluene Coelut	Average RF			RSD = 6.5		Average RF = 1.090					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.500	1.254	02	3.000	1.028	03	6.000	1.079	04	15.000	1.099
05	60.000	1.013	06	150.000	1.079	07	300.000	1.129	08	450.000	1.080
09	600.000	1.051									
2,4-Dichlorobenzotrifluoride	Average RF			RSD = 5.3		Average RF = 0.6114					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6622	02	1.000	0.5626	03	2.000	0.5982	04	5.000	0.6245
05	20.000	0.5706	06	50.000	0.6273	07	100.000	0.6457	08	150.000	0.6127
09	200.000	0.5990									
2,5-Dichlorobenzotrifluoride	Average RF			RSD = 4.4		Average RF = 0.7111					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6902	02	1.000	0.7425	03	2.000	0.7431	04	5.000	0.7327
05	20.000	0.6573	06	50.000	0.7015	07	100.000	0.7362	08	150.000	0.7210
09	200.000	0.6757									
2-Butanone (MEK)	Average RF			RSD = 4.8		Average RF = 0.2444					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.2692	02	1.000	0.2489	03	2.000	0.2517	04	5.000	0.2447
05	20.000	0.2400	06	50.000	0.2450	07	100.000	0.2355	08	150.000	0.2302
09	200.000	0.2347									

00112

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte **Curve Fit** **Weighting**

2-Chloro-1,3-butadiene Average RF RSD = 4.3 Average RF = 1.048

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.080	02	1.000	1.072	03	2.000	1.097	04	5.000	1.088
05	20.000	1.042	06	50.000	1.049	07	100.000	1.044	08	150.000	1.002
09	200.000	0.9550									

2-Chlorobenzotrifluoride Average RF RSD = 8.4 Average RF = 0.4797

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5639	02	1.000	0.4614	03	2.000	0.5124	04	5.000	0.4939
05	20.000	0.4413	06	50.000	0.4751	07	100.000	0.4832	08	150.000	0.4539
09	200.000	0.4321									

2-Chloroethyl Vinyl Ether Average RF RSD = 9.7 Average RF = 0.1921

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.2396	02	1.000	0.1805	03	2.000	0.1829	04	5.000	0.1865
05	20.000	0.1807	06	50.000	0.1889	07	100.000	0.1974	08	150.000	0.1870
09	200.000	0.1851									

2-Chlorotoluene Average RF RSD = 7.8 Average RF = 2.204

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.553	02	1.000	2.258	03	2.000	2.258	04	5.000	2.318
05	20.000	1.975	06	50.000	2.218	07	100.000	2.111	08	150.000	2.081
09	200.000	2.060									

2-Hexanone Average RF RSD = 4.4 Average RF = 0.2032

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	2.000	0.2086	04	5.000	0.1992	05	20.000	0.2147	06	50.000	0.2101
07	100.000	0.2044	08	150.000	0.1971	09	200.000	0.1884			

2-Methyl-1-propanol Average RF RSD = 4.0 Average RF = 0.01141

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.000	0.01164	02	20.000	0.01170	03	40.000	0.01168	04	100.000	0.01216
05	400.000	0.01114	06	1000.000	0.01126	07	2000.000	0.01066	08	3000.000	0.01097
09	4000.000	0.01149									

2-Methyl-2-propanol Average RF RSD = 4.0 Average RF = 0.03751

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.000	0.04052	02	20.000	0.03843	03	40.000	0.03778	04	100.000	0.03807
05	400.000	0.03667	06	1000.000	0.03776	07	2000.000	0.03594	08	3000.000	0.03554
09	4000.000	0.03687									

2-Nitropropane Average RF RSD = 11.8 Average RF = 0.06768

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.06439	02	2.000	0.06826	03	4.000	0.05474	04	10.000	0.06196
05	40.000	0.06086	06	100.000	0.07137	07	200.000	0.07090	08	300.000	0.07868
09	400.000	0.07792									

2-Propanol Average RF RSD = 8.2 Average RF = 0.02550

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	20.000	0.02991	03	40.000	0.02588	04	100.000	0.02637	05	400.000	0.02527
06	1000.000	0.02555	07	2000.000	0.02393	08	3000.000	0.02330	09	4000.000	0.02377

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte	Curve Fit	Weighting									
3,4- and 2,3-Dichlorotoluene Coelution	Average RF			RSD = 3.0		Average RF = 1.128					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.086	02	2.000	1.134	03	4.000	1.149	04	10.000	1.135
05	40.000	1.070	06	100.000	1.149	07	200.000	1.180	08	300.000	1.142
09	400.000	1.108									
3,4-Dichlorobenzotrifluoride	Average RF			RSD = 5.9		Average RF = 0.7174					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7834	02	1.000	0.7512	03	2.000	0.7068	04	5.000	0.7550
05	20.000	0.6493	06	50.000	0.6875	07	100.000	0.7363	08	150.000	0.7079
09	200.000	0.6795									
3-Chloro-1-propene	Average RF			RSD = 7.1		Average RF = 0.9611					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.9924	02	1.000	0.9796	03	2.000	1.023	04	5.000	1.062
05	20.000	0.8938	06	50.000	0.9985	07	100.000	0.9567	08	150.000	0.8869
09	200.000	0.8568									
3-Chlorobenzotrifluoride	Average RF			RSD = 5.0		Average RF = 0.5031					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5354	02	1.000	0.5186	03	2.000	0.5092	04	5.000	0.5289
05	20.000	0.4741	06	50.000	0.5122	07	100.000	0.5079	08	150.000	0.4775
09	200.000	0.4644									
3-Chlorotoluene	Average RF			RSD = 5.4		Average RF = 2.200					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.393	02	1.000	2.185	03	2.000	2.249	04	5.000	2.355
05	20.000	2.069	06	50.000	2.159	07	100.000	2.222	08	150.000	2.113
09	200.000	2.053									
4-Bromofluorobenzene	Average RF			RSD = 6.1		Average RF = 0.4721					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	50.000	0.5107	03	60.000	0.4949	04	70.000	0.4824	05	100.000	0.4597
07	125.000	0.4485	08	150.000	0.4365						
4-Chlorotoluene	Average RF			RSD = 5.4		Average RF = 2.230					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.233	02	1.000	2.345	03	2.000	2.391	04	5.000	2.376
05	20.000	2.045	06	50.000	2.227	07	100.000	2.173	08	150.000	2.168
09	200.000	2.109									
4-Isopropyltoluene	Average RF			RSD = 7.4		Average RF = 2.345					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.721	02	1.000	2.350	03	2.000	2.373	04	5.000	2.486
05	20.000	2.172	06	50.000	2.345	07	100.000	2.247	08	150.000	2.248
09	200.000	2.167									
4-Methyl-2-pentanone	Average RF			RSD = 2.9		Average RF = 0.3050					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.000	0.3011	03	2.000	0.2929	04	5.000	0.3084	05	20.000	0.3125
06	50.000	0.3145	07	100.000	0.3147	08	150.000	0.3011	09	200.000	0.2949
Acetone	Average RF			RSD = 17.0		Average RF = 0.1875					
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	5.000	0.2397	05	20.000	0.2060	06	50.000	0.1897	07	100.000	0.1757
08	150.000	0.1592	09	200.000	0.1548						

00114

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte **Curve Fit** Average RF **Weighting**

Acetonitrile Average RF RSD = 17.7 Average RF = 0.04791

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.05821	03	10.000	0.05011	04	50.000	0.02875	05	100.000	0.04747
06	250.000	0.05220	07	500.000	0.04936	08	750.000	0.04755	09	1000.000	0.04961

Acrolein Average RF RSD = 10.6 Average RF = 0.07979

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.500	0.09869	02	5.000	0.08501	03	10.000	0.07725	04	25.000	0.08223
05	100.000	0.07857	06	250.000	0.07784	07	500.000	0.07693	08	750.000	0.07223
09	1000.000	0.06937									

Acrylonitrile Average RF RSD = 5.7 Average RF = 0.1599

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.500	0.1780	02	5.000	0.1663	03	10.000	0.1512	04	25.000	0.1657
05	100.000	0.1579	06	250.000	0.1626	07	500.000	0.1524	08	750.000	0.1526
09	1000.000	0.1525									

Benzene Average RF RSD = 11.0 Average RF = 1.296

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.539	02	1.000	1.337	03	2.000	1.446	04	5.000	1.387
05	20.000	1.161	06	50.000	1.301	07	100.000	1.190	08	150.000	1.171
09	200.000	1.136									

Bromobenzene Average RF RSD = 4.7 Average RF = 0.7603

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8065	02	1.000	0.7499	03	2.000	0.7568	04	5.000	0.8274
05	20.000	0.7124	06	50.000	0.7628	07	100.000	0.7389	08	150.000	0.7499
09	200.000	0.7379									

Bromochloromethane Average RF RSD = 8.0 Average RF = 0.2905

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3388	02	1.000	0.3119	03	2.000	0.2957	04	5.000	0.2907
05	20.000	0.2763	06	50.000	0.2927	07	100.000	0.2684	08	150.000	0.2722
09	200.000	0.2682									

Bromodichloromethane Average RF RSD = 4.3 Average RF = 0.4349

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4363	02	1.000	0.4014	03	2.000	0.4503	04	5.000	0.4555
05	20.000	0.4144	06	50.000	0.4576	07	100.000	0.4312	08	150.000	0.4364
09	200.000	0.4306									

Bromoform Average RF RSD = 5.1 Average RF = 0.1936

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.1952	02	1.000	0.1741	03	2.000	0.1932	04	5.000	0.1878
05	20.000	0.1875	06	50.000	0.2091	07	100.000	0.2014	08	150.000	0.1987
09	200.000	0.1958									

Bromomethane Average RF RSD = 7.2 Average RF = 0.4482

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4758	02	1.000	0.5059	03	2.000	0.4196	04	5.000	0.4431
05	20.000	0.3955	06	50.000	0.4700	07	100.000	0.4363	08	150.000	0.4416
09	200.000	0.4465									

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte **Curve Fit** **Weighting**

Carbon Disulfide Average RF RSD = 4.4 Average RF = 2.068

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.089	02	1.000	2.076	03	2.000	2.120	04	5.000	2.167
05	20.000	2.074	06	50.000	2.137	07	100.000	2.104	08	150.000	1.967
09	200.000	1.876									

Carbon Tetrachloride Average RF RSD = 6.7 Average RF = 0.3939

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4404	02	1.000	0.4139	03	2.000	0.3987	04	5.000	0.4081
05	20.000	0.3520	06	50.000	0.4032	07	100.000	0.3768	08	150.000	0.3778
09	200.000	0.3740									

Chlorobenzene Average RF RSD = 6.0 Average RF = 0.8920

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8906	02	1.000	0.9251	03	2.000	0.9257	04	5.000	0.9823
05	20.000	0.8166	06	50.000	0.9319	07	100.000	0.8679	08	150.000	0.8577
09	200.000	0.8300									

Chloroethane Average RF RSD = 13.0 Average RF = 0.4643

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6130	02	1.000	0.4818	03	2.000	0.4645	04	5.000	0.4513
05	20.000	0.4021	06	50.000	0.4630	07	100.000	0.4339	08	150.000	0.4398
09	200.000	0.4292									

Chloroform Average RF RSD = 8.4 Average RF = 0.9297

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.063	02	1.000	0.9823	03	2.000	0.9659	04	5.000	0.9933
05	20.000	0.8380	06	50.000	0.9453	07	100.000	0.8622	08	150.000	0.8632
09	200.000	0.8541									

Chloromethane Average RF RSD = 12.8 Average RF = 0.6798

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8663	02	1.000	0.7719	03	2.000	0.6583	04	5.000	0.6678
05	20.000	0.5802	06	50.000	0.6741	07	100.000	0.6243	08	150.000	0.6427
09	200.000	0.6330									

Cyclohexane Average RF RSD = 7.1 Average RF = 0.6065

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6746	02	1.000	0.5912	03	2.000	0.6173	04	5.000	0.6667
05	20.000	0.5785	06	50.000	0.6290	07	100.000	0.5734	08	150.000	0.5786
09	200.000	0.5496									

Cyclohexanone Average RF RSD = 11.6 Average RF = 0.03309

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	20.000	0.03799	03	40.000	0.03587	04	100.000	0.03686	05	400.000	0.03463
06	1000.000	0.03292	07	2000.000	0.02904	08	3000.000	0.02845	09	4000.000	0.02900

Dibromochloromethane Average RF RSD = 3.0 Average RF = 0.3549

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3454	02	1.000	0.3695	03	2.000	0.3522	04	5.000	0.3685
05	20.000	0.3402	06	50.000	0.3655	07	100.000	0.3522	08	150.000	0.3543
09	200.000	0.3462									

Initial Calibration - Detailed Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Signal ID:	1

Analyte **Curve Fit** **Weighting**

Dibromofluoromethane Average RF RSD = 3.8 Average RF = 0.3219

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	50.000	0.3343	03	60.000	0.3340	04	70.000	0.3279	05	100.000	0.3198
07	125.000	0.3086	08	150.000	0.3067						

Dibromomethane Average RF RSD = 5.1 Average RF = 0.1845

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.1844	02	1.000	0.1825	03	2.000	0.1921	04	5.000	0.2016
05	20.000	0.1819	06	50.000	0.1929	07	100.000	0.1759	08	150.000	0.1763
09	200.000	0.1733									

Dichlorodifluoromethane (CFC 12) Average RF RSD = 6.2 Average RF = 0.6344

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6720	02	1.000	0.5824	03	2.000	0.6025	04	5.000	0.6046
05	20.000	0.5917	06	50.000	0.6865	07	100.000	0.6575	08	150.000	0.6654
09	200.000	0.6471									

Dichlorofluoromethane (CFC 21) Average RF RSD = 5.8 Average RF = 1.140

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.216	02	1.000	1.223	03	2.000	1.171	04	5.000	1.186
05	20.000	1.083	06	50.000	1.170	07	100.000	1.078	08	150.000	1.086
09	200.000	1.048									

Dichloromethane Average RF RSD = 12.0 Average RF = 0.5742

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6774	02	1.000	0.6507	03	2.000	0.6381	04	5.000	0.6059
05	20.000	0.5056	06	50.000	0.5538	07	100.000	0.5118	08	150.000	0.5152
09	200.000	0.5094									

Diethyl Ether Average RF RSD = 7.9 Average RF = 0.4445

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4554	02	1.000	0.4941	03	2.000	0.4852	04	5.000	0.4714
05	20.000	0.4280	06	50.000	0.4484	07	100.000	0.4120	08	150.000	0.4063
09	200.000	0.3998									

Diisopropyl Ether Average RF RSD = 11.0 Average RF = 2.212

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.586	02	1.000	2.444	03	2.000	2.333	04	5.000	2.436
05	20.000	2.005	06	50.000	2.129	07	100.000	2.089	08	150.000	2.002
09	200.000	1.886									

Ethyl Methacrylate Average RF RSD = 4.2 Average RF = 0.3908

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3960	02	1.000	0.4151	03	2.000	0.3946	04	5.000	0.4109
05	20.000	0.3816	06	50.000	0.3990	07	100.000	0.3792	08	150.000	0.3718
09	200.000	0.3693									

Ethyl tert-Butyl Ether Average RF RSD = 6.5 Average RF = 1.835

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.897	02	1.000	1.991	03	2.000	1.850	04	5.000	2.016
05	20.000	1.694	06	50.000	1.828	07	100.000	1.814	08	150.000	1.750
09	200.000	1.678									

90117

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte **Curve Fit** Average RF **Weighting** Weighted

Ethylbenzene Average RF RSD = 9.4 Average RF = 1.508

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.684	02	1.000	1.593	03	2.000	1.640	04	5.000	1.650
05	20.000	1.393	06	50.000	1.535	07	100.000	1.409	08	150.000	1.366
09	200.000	1.304									

Hexachlorobutadiene Average RF RSD = 7.9 Average RF = 0.3233

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3785	02	1.000	0.3199	03	2.000	0.2927	04	5.000	0.3060
05	20.000	0.2977	06	50.000	0.3255	07	100.000	0.3214	08	150.000	0.3324
09	200.000	0.3353									

Iodomethane Average RF RSD = 3.6 Average RF = 0.8298

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.7840	02	1.000	0.8519	03	2.000	0.7896	04	5.000	0.8404
05	20.000	0.8239	06	50.000	0.8538	07	100.000	0.8748	08	150.000	0.8331
09	200.000	0.8169									

Isopropylbenzene (Cumene) Average RF RSD = 8.7 Average RF = 1.394

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.448	02	1.000	1.567	03	2.000	1.545	04	5.000	1.451
05	20.000	1.283	06	50.000	1.423	07	100.000	1.323	08	150.000	1.285
09	200.000	1.220									

Methacrylonitrile Average RF RSD = 11.1 Average RF = 0.1874

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.2352	02	1.000	0.1987	03	2.000	0.1692	04	5.000	0.1942
05	20.000	0.1761	06	50.000	0.1908	07	100.000	0.1717	08	150.000	0.1739
09	200.000	0.1770									

Methyl Acetate Average RF RSD = 8.8 Average RF = 0.3520

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.4156	02	1.000	0.3607	03	2.000	0.3520	04	5.000	0.3812
05	20.000	0.3396	06	50.000	0.3511	07	100.000	0.3279	08	150.000	0.3210
09	200.000	0.3192									

Methyl Methacrylate Average RF RSD = 5.6 Average RF = 0.07400

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.06812	02	1.000	0.07629	03	2.000	0.08241	04	5.000	0.07033
05	20.000	0.07212	06	50.000	0.07698	07	100.000	0.07263	08	150.000	0.07378
09	200.000	0.07339									

Methyl tert-Butyl Ether Average RF RSD = 5.2 Average RF = 1.363

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.439	02	1.000	1.440	03	2.000	1.364	04	5.000	1.465
05	20.000	1.310	06	50.000	1.379	07	100.000	1.297	08	150.000	1.289
09	200.000	1.289									

Methylcyclohexane Average RF RSD = 10.9 Average RF = 0.4776

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5568	02	1.000	0.5238	03	2.000	0.5015	04	5.000	0.5267
05	20.000	0.4459	06	50.000	0.4748	07	100.000	0.4336	08	150.000	0.4295
09	200.000	0.4058									

00118

Initial Calibration - Detailed Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Signal ID:	1

Naphthalene — Curve Fit: Average RF — Weighting: RSD = 3.7 — Average RF = 1.706

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.697	02	1.000	1.689	03	2.000	1.633	04	5.000	1.696
05	20.000	1.598	06	50.000	1.770	07	100.000	1.720	08	150.000	1.771
09	200.000	1.777									

Propionitrile — Curve Fit: Average RF — Weighting: RSD = 14.0 — Average RF = 0.05590

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.500	0.07475	02	5.000	0.05831	03	10.000	0.05230	04	25.000	0.05945
05	100.000	0.05202	06	250.000	0.05498	07	500.000	0.05049	08	750.000	0.05002
09	1000.000	0.05078									

Styrene — Curve Fit: Average RF — Weighting: RSD = 9.5 — Average RF = 0.9616

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.025	02	1.000	1.003	03	2.000	1.068	04	5.000	1.079
05	20.000	0.9027	06	50.000	0.9858	07	100.000	0.9017	08	150.000	0.8686
09	200.000	0.8211									

Tetrachloroethene (PCE) — Curve Fit: Average RF — Weighting: RSD = 7.3 — Average RF = 0.3710

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3825	02	1.000	0.4074	03	2.000	0.3894	04	5.000	0.4018
05	20.000	0.3311	06	50.000	0.3777	07	100.000	0.3535	08	150.000	0.3540
09	200.000	0.3416									

Tetrahydrofuran (THF) — Curve Fit: Average RF — Weighting: RSD = 13.6 — Average RF = 0.1314

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.000	0.1699	03	2.000	0.1444	04	5.000	0.1320	05	20.000	0.1214
06	50.000	0.1253	07	100.000	0.1190	08	150.000	0.1200	09	200.000	0.1188

Toluene — Curve Fit: Average RF — Weighting: RSD = 9.5 — Average RF = 1.349

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	1.537	02	1.000	1.427	03	2.000	1.405	04	5.000	1.495
05	20.000	1.226	06	50.000	1.378	07	100.000	1.264	08	150.000	1.239
09	200.000	1.174									

Toluene-d8 — Curve Fit: Average RF — Weighting: RSD = 5.9 — Average RF = 1.086

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	50.000	1.175	03	60.000	1.142	04	70.000	1.098	05	100.000	1.055
07	125.000	1.032	08	150.000	1.011						

Trichloroethene (TCE) — Curve Fit: Average RF — Weighting: RSD = 5.8 — Average RF = 0.3299

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.3320	02	1.000	0.3451	03	2.000	0.3431	04	5.000	0.3585
05	20.000	0.3020	06	50.000	0.3442	07	100.000	0.3169	08	150.000	0.3190
09	200.000	0.3087									

Trichlorofluoromethane (CFC 11) — Curve Fit: Average RF — Weighting: RSD = 8.7 — Average RF = 0.7383

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8489	02	1.000	0.6427	03	2.000	0.7911	04	5.000	0.7757
05	20.000	0.6636	06	50.000	0.7584	07	100.000	0.7154	08	150.000	0.7124
09	200.000	0.7360									

Initial Calibration - Detailed Report

Calibration ID:	RC1500031	**Instrument ID:**	R-MS-07
		Signal ID:	1

Analyte — **Curve Fit** — **Weighting**

Vinyl Acetate — Average RF — RSD = 11.0 — Average RF = 0.07523

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.08035	02	1.000	0.05571	03	2.000	0.07009	04	5.000	0.07605
05	20.000	0.07952	06	50.000	0.07429	07	100.000	0.08373	08	150.000	0.07793
09	200.000	0.07935									

Vinyl Chloride — Average RF — RSD = 5.2 — Average RF = 0.6123

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6339	02	1.000	0.6209	03	2.000	0.5997	04	5.000	0.6462
05	20.000	0.5452	06	50.000	0.6489	07	100.000	0.5993	08	150.000	0.6014
09	200.000	0.6152									

cis-1,2-Dichloroethene — Average RF — RSD = 7.4 — Average RF = 0.5712

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5858	02	1.000	0.6358	03	2.000	0.6140	04	5.000	0.5979
05	20.000	0.5123	06	50.000	0.5862	07	100.000	0.5327	08	150.000	0.5464
09	200.000	0.5297									

cis-1,3-Dichloropropene — Average RF — RSD = 5.6 — Average RF = 0.5432

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6115	02	1.000	0.5452	03	2.000	0.5434	04	5.000	0.5485
05	20.000	0.5062	06	50.000	0.5585	07	100.000	0.5249	08	150.000	0.5288
09	200.000	0.5215									

m,p-Xylenes — Average RF — RSD = 10.0 — Average RF = 0.5588

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6354	02	2.000	0.6142	03	4.000	0.5942	04	10.000	0.6075
05	40.000	0.5124	06	100.000	0.5595	07	200.000	0.5161	08	300.000	0.5073
09	400.000	0.4827									

n-Butyl Acetate — Average RF — RSD = 4.9 — Average RF = 0.5050

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5508	02	1.000	0.4941	03	2.000	0.5076	04	5.000	0.5347
05	20.000	0.4960	06	50.000	0.5158	07	100.000	0.4871	08	150.000	0.4839
09	200.000	0.4751									

n-Butylbenzene — Average RF — RSD = 7.0 — Average RF = 2.192

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.514	02	1.000	2.200	03	2.000	2.249	04	5.000	2.276
05	20.000	2.054	06	50.000	2.236	07	100.000	2.118	08	150.000	2.078
09	200.000	2.007									

n-Heptane — Average RF — RSD = 10.4 — Average RF = 0.4636

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5783	02	1.000	0.4790	03	2.000	0.4670	04	5.000	0.4642
05	20.000	0.4363	06	50.000	0.4683	07	100.000	0.4339	08	150.000	0.4310
09	200.000	0.4140									

n-Propylbenzene — Average RF — RSD = 7.0 — Average RF = 3.476

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	3.894	02	1.000	3.569	03	2.000	3.595	04	5.000	3.694
05	20.000	3.164	06	50.000	3.535	07	100.000	3.328	08	150.000	3.327
09	200.000	3.179									

Initial Calibration - Detailed Report

Calibration ID: RC1500031 **Instrument ID:** R-MS-07
Signal ID: 1

Analyte **Curve Fit** **Weighting**

o-Xylene Average RF RSD = 10.0 Average RF = 0.5537

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.6337	02	1.000	0.5962	03	2.000	0.5917	04	5.000	0.6069
05	20.000	0.5015	06	50.000	0.5548	07	100.000	0.5125	08	150.000	0.5071
09	200.000	0.4789									

sec-Butylbenzene Average RF RSD = 6.0 Average RF = 2.815

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.928	02	1.000	3.015	03	2.000	2.979	04	5.000	2.980
05	20.000	2.591	06	50.000	2.825	07	100.000	2.711	08	150.000	2.717
09	200.000	2.594									

tert-Amyl Methyl Ether Average RF RSD = 6.7 Average RF = 0.8825

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.9527	02	1.000	0.8960	03	2.000	0.9278	04	5.000	0.9665
05	20.000	0.8229	06	50.000	0.8787	07	100.000	0.8637	08	150.000	0.8379
09	200.000	0.7959									

tert-Butylbenzene Average RF RSD = 6.8 Average RF = 1.987

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	2.159	02	1.000	2.079	03	2.000	2.160	04	5.000	2.053
05	20.000	1.783	06	50.000	1.968	07	100.000	1.894	08	150.000	1.933
09	200.000	1.853									

trans-1,2-Dichloroethene Average RF RSD = 8.8 Average RF = 0.5329

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5989	02	1.000	0.5688	03	2.000	0.5712	04	5.000	0.5779
05	20.000	0.4708	06	50.000	0.5284	07	100.000	0.4911	08	150.000	0.5003
09	200.000	0.4889									

trans-1,3-Dichloropropene Average RF RSD = 4.7 Average RF = 0.4833

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.5216	02	1.000	0.4818	03	2.000	0.4945	04	5.000	0.4903
05	20.000	0.4397	06	50.000	0.4991	07	100.000	0.4795	08	150.000	0.4744
09	200.000	0.4692									

trans-1,4-Dichloro-2-butene Average RF RSD = 14.1 Average RF = 0.1606

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.000	0.1557	03	2.000	0.1337	04	5.000	0.1285	05	20.000	0.1477
06	50.000	0.1709	07	100.000	0.1784	08	150.000	0.1835	09	200.000	0.1866

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/16/15 10:21

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\041615\W1125.D\
Instrument ID: R-MS-07

Analytical Method: 8260C
Analysis Lot: 440776

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.29	37282	Pass
75	95	30	60	44.03	85104	Pass
95	95	100	100	100.00	193274	Pass
96	95	5	9	6.40	12374	Pass
173	174	0	2	0.14	233	Pass
174	95	50	120	83.59	161551	Pass
175	174	5	9	7.48	12080	Pass
176	174	95	101	95.65	154519	Pass
177	176	5	9	6.64	10265	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1503745-02	I:\ACQUDATA\MSVOA7\DATA\041615\W1126.D\	4/16/15 10:58	
Lab Control Sample	RQ1503745-03	I:\ACQUDATA\MSVOA7\DATA\041615\W1127.D\	4/16/15 11:33	
Method Blank	RQ1503745-04	I:\ACQUDATA\MSVOA7\DATA\041615\W1129.D\	4/16/15 12:44	
TB-041315	R1502645-001	I:\ACQUDATA\MSVOA7\DATA\041615\W1135.D\	4/16/15 16:16	
MRC-MW-32A-041315	R1502645-002	I:\ACQUDATA\MSVOA7\DATA\041615\W1136.D\	4/16/15 16:51	
MRC-MW-34A-041315	R1502645-003	I:\ACQUDATA\MSVOA7\DATA\041615\W1137.D\	4/16/15 17:27	
MRC-MW-34B-041315	R1502645-005	I:\ACQUDATA\MSVOA7\DATA\041615\W1138.D\	4/16/15 18:02	
MRC-MW-34C-041315	R1502645-007	I:\ACQUDATA\MSVOA7\DATA\041615\W1139.D\	4/16/15 18:37	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/16/15

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\MSVOA7\DATA\041615\W1126.D\

Calibration Date: 3/23/15
Calibration ID: RC1500031
Analysis Lot: 440776
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1,1,2-Tetrachloroethane	50.0	50.7	0.3310	0.3357	1.4	NA	± 20 %	Average RF
1,1,1-Trichloroethane (TCA)	50.0	45.6	0.7468	0.6812	-8.8	NA	± 20 %	Average RF
1,1,2,2-Tetrachloroethane	50.0	51.8	0.6550	0.6779	3.5	NA	± 20 %	Average RF
1,1,2-Trichlorotrifluoroethane	50.0	44.2	0.5077	0.4488	-11.6	NA	± 20 %	Average RF
1,1-Dichloroethane (1,1-DCA)	50.0	45.4	0.9472	0.8602	-9.2	NA	± 20 %	Average RF
1,1-Dichloroethene (1,1-DCE)	50.0	43.9	0.4486	0.3941	-12.2	NA	± 20 %	Average RF
1,1-Dichloropropene	50.0	47.5	0.4497	0.4269	-5.1	NA	± 20 %	Average RF
1,2,3-Trichlorobenzene	50.0	49.4	0.6710	0.6627	-1.2	NA	± 20 %	Average RF
1,2,3-Trichloropropane	50.0	47.6	0.2049	0.1949	-4.9	NA	± 20 %	Average RF
1,2,4-Trichlorobenzene	50.0	51.1	0.7965	0.8133	2.1	NA	± 20 %	Average RF
1,2,4-Trimethylbenzene	50.0	48.8	2.302	2.247	-2.4	NA	± 20 %	Average RF
1,2-Dibromo-3-chloropropane (DBCP)	50.0	48.7	0.1375	0.1338	-2.7	NA	± 20 %	Average RF
1,2-Dibromoethane	50.0	50.0	0.2834	0.2835	0.0	NA	± 20 %	Average RF
1,2-Dichlorobenzene	50.0	49.1	1.331	1.306	-1.9	NA	± 20 %	Average RF
1,2-Dichloroethane	50.0	50.0	0.4110	0.4114	0.1	NA	± 20 %	Average RF
1,2-Dichloropropane	50.0	46.7	0.3601	0.3363	-6.6	NA	± 20 %	Average RF
1,3-Dichlorobenzene	50.0	49.6	1.400	1.388	-0.9	NA	± 20 %	Average RF
1,3-Dichloropropane	50.0	49.7	0.5273	0.5241	-0.6	NA	± 20 %	Average RF
1,4-Dichlorobenzene	50.0	48.8	1.406	1.371	-2.5	NA	± 20 %	Average RF
2,2-Dichloropropane	50.0	42.8	0.7405	0.6341	-14.4	NA	± 20 %	Average RF
2-Butanone (MEK)	50.0	43.2	0.2444	0.2109	-13.7	NA	± 20 %	Average RF
2-Chloroethyl Vinyl Ether	50.0	26.8	0.1921	0.1028	-46.5 *	NA	± 20 %	Average RF
2-Chlorotoluene	50.0	48.9	2.204	2.154	-2.3	NA	± 20 %	Average RF
2-Hexanone	50.0	53.4	0.2032	0.2171	6.8	NA	± 20 %	Average RF
tert-Butyl Alcohol	1000	946	0.03751	0.03548	-5.4	NA	± 20 %	Average RF
4-Chlorotoluene	50.0	47.9	2.230	2.136	-4.2	NA	± 20 %	Average RF
4-Isopropyltoluene	50.0	48.0	2.345	2.251	-4.0	NA	± 20 %	Average RF
4-Methyl-2-pentanone	50.0	52.1	0.3050	0.3176	4.1	NA	± 20 %	Average RF
Acetone	50.0	43.1	0.1875	0.1618	-13.7	NA	± 20 %	Average RF
Benzene	50.0	47.0	1.296	1.217	-6.1	NA	± 20 %	Average RF
Bromobenzene	50.0	50.0	0.7603	0.7606	0.0	NA	± 20 %	Average RF
Bromochloromethane	50.0	42.2	0.2905	0.2451	-15.6	NA	± 20 %	Average RF
Bromodichloromethane	50.0	50.3	0.4349	0.4376	0.6	NA	± 20 %	Average RF
Bromoform	50.0	57.1	0.1936	0.2211	14.2	NA	± 20 %	Average RF
Bromomethane	50.0	39.9	0.4482	0.3575	-20.2 *	NA	± 20 %	Average RF
Carbon Disulfide	50.0	41.2	2.068	1.703	-17.7	NA	± 20 %	Average RF
Carbon Tetrachloride	50.0	46.7	0.3939	0.3681	-6.5	NA	± 20 %	Average RF
Chlorobenzene	50.0	50.4	0.8920	0.8998	0.9	NA	± 20 %	Average RF
Chloroethane	50.0	40.4	0.4643	0.3748	-19.3	NA	± 20 %	Average RF
Chloroform	50.0	45.2	0.9297	0.8398	-9.7	NA	± 20 %	Average RF
Chloromethane	50.0	47.9	0.6798	0.6514	-4.2	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/16/15

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\MSVOA7\DATA\041615\W1126.D\

Calibration Date: 3/23/15
Calibration ID: RC1500031
Analysis Lot: 440776
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dibromochloromethane	50.0	51.0	0.3549	0.3621	2.0	NA	± 20 %	Average RF
Dibromomethane	50.0	48.8	0.1845	0.1799	-2.5	NA	± 20 %	Average RF
Dichlorodifluoromethane (CFC 12)	50.0	46.1	0.6344	0.5849	-7.8	NA	± 20 %	Average RF
Methylene Chloride	50.0	42.3	0.5742	0.4859	-15.4	NA	± 20 %	Average RF
Diisopropyl Ether	50.0	43.2	2.212	1.910	-13.6	NA	± 20 %	Average RF
Ethyl tert-Butyl Ether	50.0	43.6	1.835	1.600	-12.8	NA	± 20 %	Average RF
Ethylbenzene	50.0	50.7	1.508	1.529	1.4	NA	± 20 %	Average RF
Hexachlorobutadiene	50.0	52.9	0.3233	0.3422	5.9	NA	± 20 %	Average RF
Isopropylbenzene (Cumene)	50.0	50.1	1.394	1.397	0.3	NA	± 20 %	Average RF
Methyl tert-Butyl Ether	50.0	45.1	1.363	1.230	-9.8	NA	± 20 %	Average RF
Naphthalene	50.0	47.7	1.706	1.627	-4.6	NA	± 20 %	Average RF
Styrene	50.0	49.6	0.9616	0.9535	-0.8	NA	± 20 %	Average RF
Tetrachloroethene (PCE)	50.0	50.2	0.3710	0.3722	0.3	NA	± 20 %	Average RF
Toluene	50.0	49.9	1.349	1.346	-0.3	NA	± 20 %	Average RF
Trichloroethene (TCE)	50.0	47.7	0.3299	0.3145	-4.7	NA	± 20 %	Average RF
Trichlorofluoromethane (CFC 11)	50.0	44.5	0.7383	0.6577	-10.9	NA	± 20 %	Average RF
Vinyl Acetate	50.0	50.7	0.07523	0.07621	1.3	NA	± 20 %	Average RF
Vinyl Chloride	50.0	49.3	0.6123	0.6035	-1.4	NA	± 20 %	Average RF
Xylenes, Total	150	146	NA	NA	NA	NA	± 20 %	
cis-1,2-Dichloroethene	50.0	44.7	0.5712	0.5102	-10.7	NA	± 20 %	Average RF
cis-1,3-Dichloropropene	50.0	48.6	0.5432	0.5283	-2.7	NA	± 20 %	Average RF
m,p-Xylenes	100	97.5	0.5588	0.5447	-2.5	NA	± 20 %	Average RF
n-Butylbenzene	50.0	47.5	2.192	2.083	-5.0	NA	± 20 %	Average RF
n-Propylbenzene	50.0	49.0	3.476	3.407	-2.0	NA	± 20 %	Average RF
o-Xylene	50.0	48.9	0.5537	0.5413	-2.2	NA	± 20 %	Average RF
sec-Butylbenzene	50.0	47.5	2.815	2.674	-5.0	NA	± 20 %	Average RF
tert-Amyl Methyl Ether	50.0	46.6	0.8825	0.8217	-6.9	NA	± 20 %	Average RF
tert-Butylbenzene	50.0	48.0	1.987	1.905	-4.1	NA	± 20 %	Average RF
trans-1,2-Dichloroethene	50.0	43.2	0.5329	0.4605	-13.6	NA	± 20 %	Average RF
trans-1,3-Dichloropropene	50.0	50.7	0.4833	0.4900	1.4	NA	± 20 %	Average RF
4-Bromofluorobenzene	50.0	52.1	0.4721	0.4914	4.1	NA	± 20 %	Average RF
Dibromofluoromethane	50.0	51.6	0.3219	0.3322	3.2	NA	± 20 %	Average RF
Toluene-d8	50.0	55.6	1.086	1.206	11.1	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15 10:22

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\MSVOA7\DATA\042015\W1194.D\
Instrument ID: R-MS-07

Analytical Method: 8260C
Analysis Lot: 441201

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.01	36536	Pass
75	95	30	60	45.17	86801	Pass
95	95	100	100	100.00	192151	Pass
96	95	5	9	6.91	13277	Pass
173	174	0	2	0.11	173	Pass
174	95	50	120	82.98	159445	Pass
175	174	5	9	7.33	11695	Pass
176	174	95	101	97.90	156093	Pass
177	176	5	9	6.23	9723	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1503891-02	I:\ACQUDATA\MSVOA7\DATA\042015\W1195.D\	4/20/15 11:07	
Lab Control Sample	RQ1503891-03	I:\ACQUDATA\MSVOA7\DATA\042015\W1196.D\	4/20/15 11:42	
Method Blank	RQ1503891-04	I:\ACQUDATA\MSVOA7\DATA\042015\W1198.D\	4/20/15 12:54	
TB-041315RE	R1502645-001	I:\ACQUDATA\MSVOA7\DATA\042015\W1204.D\	4/20/15 16:27	
MRC-MW-32A-041315RE	R1502645-002	I:\ACQUDATA\MSVOA7\DATA\042015\W1205.D\	4/20/15 17:03	
MRC-MW-34A-041315RE	R1502645-003	I:\ACQUDATA\MSVOA7\DATA\042015\W1206.D\	4/20/15 17:39	
MRC-MW-34B-041315RE	R1502645-005	I:\ACQUDATA\MSVOA7\DATA\042015\W1207.D\	4/20/15 18:14	
MRC-MW-34C-041315RE	R1502645-007	I:\ACQUDATA\MSVOA7\DATA\042015\W1208.D\	4/20/15 18:50	

Reanalysis not used.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\MSVOA7\DATA\042015\W1195.D\

Calibration Date: 3/23/15
Calibration ID: RC1500031
Analysis Lot: 441201
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1,1,2-Tetrachloroethane	50.0	53.0	0.3310	0.3510	6.0	NA	± 20 %	Average RF
1,1,1-Trichloroethane (TCA)	50.0	51.0	0.7468	0.7613	1.9	NA	± 20 %	Average RF
1,1,2,2-Tetrachloroethane	50.0	54.5	0.6550	0.7137	9.0	NA	± 20 %	Average RF
1,1,2-Trichlorotrifluoroethane	50.0	48.7	0.5077	0.4949	-2.5	NA	± 20 %	Average RF
1,1-Dichloroethane (1,1-DCA)	50.0	50.9	0.9472	0.9633	1.7	NA	± 20 %	Average RF
1,1-Dichloroethene (1,1-DCE)	50.0	49.4	0.4486	0.4435	-1.1	NA	± 20 %	Average RF
1,1-Dichloropropene	50.0	52.5	0.4497	0.4723	5.0	NA	± 20 %	Average RF
1,2,3-Trichlorobenzene	50.0	51.8	0.6710	0.6945	3.5	NA	± 20 %	Average RF
1,2,3-Trichloropropane	50.0	49.3	0.2049	0.2022	-1.3	NA	± 20 %	Average RF
1,2,4-Trichlorobenzene	50.0	51.9	0.7965	0.8269	3.8	NA	± 20 %	Average RF
1,2,4-Trimethylbenzene	50.0	48.2	2.302	2.219	-3.6	NA	± 20 %	Average RF
1,2-Dibromo-3-chloropropane (DBCP)	50.0	56.1	0.1375	0.1543	12.2	NA	± 20 %	Average RF
1,2-Dibromoethane	50.0	53.2	0.2834	0.3013	6.3	NA	± 20 %	Average RF
1,2-Dichlorobenzene	50.0	49.7	1.331	1.324	-0.5	NA	± 20 %	Average RF
1,2-Dichloroethane	50.0	56.0	0.4110	0.4601	11.9	NA	± 20 %	Average RF
1,2-Dichloropropane	50.0	51.1	0.3601	0.3681	2.2	NA	± 20 %	Average RF
1,3-Dichlorobenzene	50.0	48.3	1.400	1.353	-3.4	NA	± 20 %	Average RF
1,3-Dichloropropane	50.0	51.9	0.5273	0.5474	3.8	NA	± 20 %	Average RF
1,4-Dichlorobenzene	50.0	49.2	1.406	1.383	-1.6	NA	± 20 %	Average RF
2,2-Dichloropropane	50.0	47.7	0.7405	0.7057	-4.7	NA	± 20 %	Average RF
2-Butanone (MEK)	50.0	54.2	0.2444	0.2649	8.4	NA	± 20 %	Average RF
2-Chloroethyl Vinyl Ether	50.0	38.1	0.1921	0.1464	-23.8 *	NA	± 20 %	Average RF
2-Chlorotoluene	50.0	48.8	2.204	2.151	-2.4	NA	± 20 %	Average RF
2-Hexanone	50.0	62.1	0.2032	0.2523	24.2 *	NA	± 20 %	Average RF
tert-Butyl Alcohol	1000	1200	0.03751	0.04500	20.0	NA	± 20 %	Average RF
4-Chlorotoluene	50.0	49.2	2.230	2.194	-1.6	NA	± 20 %	Average RF
4-Isopropyltoluene	50.0	48.1	2.345	2.258	-3.7	NA	± 20 %	Average RF
4-Methyl-2-pentanone	50.0	59.6	0.3050	0.3635	19.2	NA	± 20 %	Average RF
Acetone	50.0	49.3	0.1875	0.1848	-1.5	NA	± 20 %	Average RF
Benzene	50.0	51.1	1.296	1.325	2.2	NA	± 20 %	Average RF
Bromobenzene	50.0	50.2	0.7603	0.7634	0.4	NA	± 20 %	Average RF
Bromochloromethane	50.0	48.1	0.2905	0.2794	-3.8	NA	± 20 %	Average RF
Bromodichloromethane	50.0	55.1	0.4349	0.4793	10.2	NA	± 20 %	Average RF
Bromoform	50.0	60.6	0.1936	0.2348	21.3 *	NA	± 20 %	Average RF
Bromomethane	50.0	44.5	0.4482	0.3986	-11.1	NA	± 20 %	Average RF
Carbon Disulfide	50.0	45.6	2.068	1.887	-8.7	NA	± 20 %	Average RF
Carbon Tetrachloride	50.0	52.3	0.3939	0.4121	4.6	NA	± 20 %	Average RF
Chlorobenzene	50.0	51.4	0.8920	0.9170	2.8	NA	± 20 %	Average RF
Chloroethane	50.0	46.3	0.4643	0.4295	-7.5	NA	± 20 %	Average RF
Chloroform	50.0	49.0	0.9297	0.9113	-2.0	NA	± 20 %	Average RF
Chloromethane	50.0	52.9	0.6798	0.7186	5.7	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\MSVOA7\DATA\042015\W1195.D\

Calibration Date: 3/23/15
Calibration ID: RC1500031
Analysis Lot: 441201
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dibromochloromethane	50.0	52.5	0.3549	0.3724	4.9	NA	± 20 %	Average RF
Dibromomethane	50.0	52.9	0.1845	0.1952	5.8	NA	± 20 %	Average RF
Dichlorodifluoromethane (CFC 12)	50.0	50.2	0.6344	0.6366	0.4	NA	± 20 %	Average RF
Methylene Chloride	50.0	45.6	0.5742	0.5242	-8.7	NA	± 20 %	Average RF
Ethylbenzene	50.0	51.7	1.508	1.558	3.3	NA	± 20 %	Average RF
Hexachlorobutadiene	50.0	52.9	0.3233	0.3418	5.7	NA	± 20 %	Average RF
Isopropylbenzene (Cumene)	50.0	51.5	1.394	1.434	2.9	NA	± 20 %	Average RF
Methyl tert-Butyl Ether	50.0	52.2	1.363	1.422	4.3	NA	± 20 %	Average RF
Naphthalene	50.0	51.6	1.706	1.759	3.1	NA	± 20 %	Average RF
Styrene	50.0	51.0	0.9616	0.9802	1.9	NA	± 20 %	Average RF
Tetrachloroethene (PCE)	50.0	51.4	0.3710	0.3816	2.8	NA	± 20 %	Average RF
Toluene	50.0	51.5	1.349	1.391	3.1	NA	± 20 %	Average RF
Trichloroethene (TCE)	50.0	51.9	0.3299	0.3423	3.7	NA	± 20 %	Average RF
Trichlorofluoromethane (CFC 11)	50.0	49.8	0.7383	0.7351	-0.4	NA	± 20 %	Average RF
Vinyl Acetate	50.0	63.6	0.07523	0.09569	27.2 *	NA	± 20 %	Average RF
Vinyl Chloride	50.0	55.1	0.6123	0.6749	10.2	NA	± 20 %	Average RF
Xylenes, Total	150	149	NA	NA	NA	NA	± 20 %	
cis-1,2-Dichloroethene	50.0	48.4	0.5712	0.5532	-3.2	NA	± 20 %	Average RF
cis-1,3-Dichloropropene	50.0	53.2	0.5432	0.5783	6.5	NA	± 20 %	Average RF
m,p-Xylenes	100	99.7	0.5588	0.5572	-0.3	NA	± 20 %	Average RF
n-Butylbenzene	50.0	48.3	2.192	2.118	-3.4	NA	± 20 %	Average RF
n-Propylbenzene	50.0	48.7	3.476	3.388	-2.5	NA	± 20 %	Average RF
o-Xylene	50.0	49.6	0.5537	0.5496	-0.7	NA	± 20 %	Average RF
sec-Butylbenzene	50.0	47.7	2.815	2.688	-4.5	NA	± 20 %	Average RF
tert-Butylbenzene	50.0	47.2	1.987	1.875	-5.6	NA	± 20 %	Average RF
trans-1,2-Dichloroethene	50.0	47.2	0.5329	0.5032	-5.6	NA	± 20 %	Average RF
trans-1,3-Dichloropropene	50.0	53.6	0.4833	0.5180	7.2	NA	± 20 %	Average RF
4-Bromofluorobenzene	50.0	54.3	0.4721	0.5128	8.6	NA	± 20 %	Average RF
Dibromofluoromethane	50.0	51.8	0.3219	0.3337	3.7	NA	± 20 %	Average RF
Toluene-d8	50.0	53.4	1.086	1.158	6.7	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Analyzed:**	4/17/15 08:37
Sample Matrix:	Water		

Method Blank Summary
Dissolved Gases by GC/FID

Sample Name:	Method Blank	**Instrument ID:**	R-GC-02
Lab Code:	RQ1503815-01	**File ID:**	1002.run

Analytical Method: RSK 175

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1503815-02	1003.run	4/17/15 08:47
MRC-MW-34B-041315	R1502645-005	1017.run	4/17/15 12:15

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	4/17/15 08:37
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503815-01	**Basis:**	NA

Dissolved Gases by GC/FID

Analytical Method:	RSK 175	**Analysis Lot:**	440888
Data File Name:	1002.run	**Instrument Name:**	R-GC-02
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
74-84-0	Ethane	0.20	U	1.0	0.20	
74-85-1	Ethene	0.11	U	1.0	0.11	
74-82-8	Methane	**0.30**	**J**	1.0	0.21	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/17/15

Lab Control Sample Summary
Dissolved Gases by GC/FID

Analytical Method: RSK 175

Units: µg/L
Basis: NA

Analysis Lot: 440888

Analyte Name	Lab Control Sample RQ1503815-02 Result	Spike Amount	% Rec	% Rec Limits
Ethane	24.9	25.9	96	75 - 118
Ethene	23.6	24.2	98	73 - 129
Methane	25.0	26.1	96	65 - 126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Analysis: RSK 175 Analyst: J. Cushman Run Method: RSK 092414.M

Date: 9/24/14 Data Path: J:\ACQDATA\ V2 \DATA\ 092414

Instr. V2 LIMS Run#: —

Pos.	Sample	Diln.	Diln. Prep.	Client	RL	Tier	Vial	pH	File#	OK?	Comments
	He Blank	–	–				–	–	1	Y	
	ICAL Blank	–	–				1	–	1001	Y	
	1 PPB	–	25uL of 20 PPB				1	–	1002	(N)	Clogged Syringe
	1 PPB	–	25uL of 20 PPB				1	–	1003	Y	
	2 PPB	–	50 uL of 20 PPB				2	–	1004	Y	
	10 PPB	–	100 uL of 50 PPB				1	–	1005	Y	
	20 PPB	–	8 uL 1° Mix / 42.5mL				3	–	1006	Y	
	50 PPB	–	20 uL 1° Mix / 42.5mL				2	–	1007	Y	
	75 PPB	–	30 uL 1° Mix / 42.5mL				1	–	1008	Y	
	100 PPB	–	40 uL 1° Mix / 42.5mL				1	–	1009	Y	
	ICV	–	–				1	–	1010	Y	

JC 9/24/14

All samples = NA mL + NA uL Surrogate; NA mL purged

Primary : 74970 Secondary : 74971 10uL/42.5mL ICV Surrogate : NA

Primary : Secondary :

Primary : Secondary :

Primary : Secondary :

ALS Environmental-Rochester

Analyst: J Cushman
Date: 09/24/14 & 11/5/14

Method: RSK-175 Dissolved Gases

Instrument I.D.: Varian FID (V2)
Column: Carboxen 1000

Compound	Avg. R.T.	1PPB R F STD 1	2PPB R F STD 2	10.0PPB R F STD 3	20PPB R F STD 4	50PPB R F STD 5	75PPB R F STD 6	100PPB R F STD 7	Avg R F	% RSD
Methane	0.28	0.7703	0.7855	0.6782	0.7406	0.6492	0.6623	0.6557	**0.7060**	8.2%
Ethylene	0.87	0.5436	0.5707	0.5131	0.5674	0.5074	0.5241	0.5252	**0.5359**	4.7%
Ethane	1.13	0.7558	0.7735	0.6762	0.7436	0.6513	0.6715	0.6615	**0.7048**	7.2%
Propene	4.72	0.1910	0.1971	0.2326	0.2471	0.2859	0.2919	0.3146	**0.2515**	19.1%
Propane	5.75	0.7257	0.8572	0.7055	0.7545	0.6608	0.6870	0.6733	**0.7234**	9.3%
Acetylene	0.63	0.1101	0.1182	0.1130	0.1304	0.1350	0.1354	0.1443	**0.1266**	10.2%

***LR =Linear Regression**

Analysis: RSK 175 Analyst: J. Cushman Run Method: RSK092414.M

Date: 11/5/14 Data Path: J:\ACQDATA\ V2 \DATA\ 110514

Instr. V2 LIMS Run#: -

Pos.	Sample	Diln.	Diln. Prep.	Client	RL	Tier	Vial	pH	File#	OK?	Comments
	Mt Blank	-	-				-	-	1	Y	
	ICAL Blank	-	-				1	-	1001	Y	
	1 PPB	-	25 mL of 20 PPB				1	-	1002	Y	
	2 PPB	-	50 mL of 20 PPB				1	-	1003	Y	
	10 PPB	-	100 mL of 50 PPB				1	-	1004	Y	
	20 PPB	-	8mL 1°Propanol / 42.5mL DI				2	-	1005	Y	
	50 PPB	-	20mL 1°Propanol / 42.5mL DI				2	-	1006	Y	
	75 PPB	-	30mL 1°Propanol / 42.5mL DI				1	-	1007	Y	
	100 PPB	-	40mL 1°Propanol / 42.5mL DI				1	-	1008	Y	
	ICV	-	-				1	-	1009	Y	

JC 11/5/14

All samples = NA mL + NA uL Surrogate; NA mL purged

Primary : 66814 spiked by JC Secondary : 66814 spiked by BW - ICV Surrogate : NA

Primary : Secondary :

Primary : Secondary :

Primary : Secondary :

BW 02/03/15

ALS Environmental-Rochester

Analyst: J Cushman
Date: 11/05/14
Time:

BW 02/03/15

Method: RSK-175 Dissolved Gases

Instrument I.D.: Varian FID (V2)

ICAL Date: 11/5/14

ICV EVALUATION

Compound	R.T. WINDOW MIN. FROM	R.T. WINDOW MIN. TO	Time	Area Units	Conc. Result	True Value	Percent Recovery	% LIMITS
Methane	0.18	0.38	0.28	17.40	24.65	26.1	94.4%	70-130
Ethylene	0.77	0.97	0.87	12.74	23.77	24.2	98.2%	70-130
Ethane	1.03	1.23	1.13	17.32	24.57	25.9	94.7%	70-130
Propene	4.75	4.95	4.85	13.80	54.87	48.1	114.1%	70-130
Propane	5.65	5.85	5.75	17.34	23.97	25.4	94.5%	70-130
Acetylene	0.53	0.73	0.63	6.72	53.03	49.9	106.4%	70-130

***LR** = Linear Regression
X = Out of Control Limits

Analysis: RSK,175 Analyst: Ben Wojciechowski Run Method: RSK0924143.m

Date: 04/17/15 Data Path: J:\ACQDATA\V2\DATA\041715

Instr. V2 LIMS Run#: 440888

Pos.	Sample	Diln.	Diln. Prep.	Client	RL	Tier	Vial	pH	File#	OK?	Comments
	Me Blank	-				-	-	-	1	-	
	CCV	-				-	1	-	1001	Y	
	MBlank	-				-	1	-	1002	Y	
	LCS	-				-	1	-	1003	Y	
	J15D2983 -001	1		[redacted]	8852	2	1	<2	1004	Y	
	-002	1					1	<2	1005	Y	
	-003	1					1	<2	1006	Y	
	-004	5	100mL				1	<2	1007	(Y)	over range, report + rpte 1/20
	-005	10	50mL				1	<2	1008	Y	
	J15D2984 -001	1					1	<2	1009	Y	
	-002	1					1	<2	1010	Y	
	-003	1					1	<2	1011	Y	
	-004	1					1	<2	1012	(Y)	over range, report + rpte 1/5
	-004	5	100mL			↓	↓	↓	1013	Y	DL
	CCV	-				-	1	-	1014	Y	
	J15D2983 -004	20	(5mL/50mL) 250mL	[redacted]	8852	2	2	<2	1015	Y	DL
	J15D2984 -005	10	50mL				1	<2	1016	(Y)	over range, report + rpte 1/25
	R15D2445 -005	1		[redacted]	979	4	1	<2	1017	Y	
	J15D2984 -001MS	1		[redacted]	8852	2	2	<2	1018	Y	
	-001MSD	1					↓	↓	1019	Y	
	-005	25	(5mL/50mL) 200mL				2	<2	1020	Y	DL
	CCV	-				-	1	-	1021	Y	

BS 04/17/15

All samples = NA mL + NA uL Surrogate; NA mL purged

Primary Mix : 74970 20mL/425mL = CCV, MB, LCS, MS, DMS Secondary Mix : 74971 10mL/425mL = LCS

Primary : Secondary :

Primary : Secondary :

Primary : Secondary :

Surrogate : NA

BW 04/17/15

ALS Environmental-Rochester

Analyst: B Wojtaslewicz
Daily Calibration Date: 04/17/15
Time: 11:05

Method: RSK-175 Dissolved Gases

CCV EVALUATION
Instrument I.D.: Varian FID (V2)
Column: Carboxen 1000

ICAL Date: 9/24/14 & 11/5/2014

Compound	R. T. Window From	To	R. T. Daily 50 Std	Area Units	Avg. R F	R. F. Daily 50 Std	% D	Conc. ppb
Methane	0.18	0.38	0.28	37.059	0.7060	0.7085	0.4%	52.3
Ethylene	0.76	0.96	0.86	26.707	0.5359	0.5520	3.0%	48.4
Ethane	1.02	1.22	1.12	36.970	0.7048	0.7128	1.1%	51.9
Propene	-0.10	0.10			0.2515	0.0000		48.1
Propane	5.60	5.80	5.70	37.429	0.7234	0.7381	2.0%	50.7
Acetylene	0.53	0.73	0.63	12.846	0.1266	0.1288	1.7%	99.8
						Avg %D:	1.6%	

BW 041715

ALS Environmental-Rochester

Analyst: B Wojtasiewicz
Daily Calibration Date: 04/17/15
Time: 13:21

Method: RSK-175 Dissolved Gases

CCV EVALUATION
Instrument I.D.: Varian FID (V2)
Column: Carboxen 1000

ICAL Date: 9/24/14 & 11/5/2014

Compound	R. T: Window From	To	R. T. Daily 50 Std	Area Units	Avg. R F	R. F. Daily 50 Std	% D	Conc. ppb
Methane	0.18	0.38	0.28	35.323	0.7060	0.6753	4.3%	52.3
Ethylene	0.76	0.96	0.86	25.710	0.5359	0.5314	0.9%	48.4
Ethane	1.02	1.22	1.12	35.209	0.7048	0.6789	3.7%	51.9
Propene	-0.10	0.10			0.2515	0.0000		48.1
Propane	5.60	5.80	5.70	35.163	0.7234	0.6934	4.1%	50.7
Acetylene	0.53	0.73	0.63	13.257	0.1266	0.1329	4.9%	99.8
						Avg %D:	3.6%	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Analyzed:**	4/20/15 15:38
Sample Matrix:	Water	**Date Extracted:**	4/15/15

Method Blank Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Sample Name:	Method Blank	**Instrument ID:**	R-MS-52
Lab Code:	RQ1503633-01	**File ID:**	I:\ACQUDATA\5973B\DATA\042015\DK883.D\
Analytical Method:	680		
Prep Method:	EPA 3510C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1503633-02	I:\ACQUDATA\5973B\DATA\042015\DK884.D\	4/20/15 16:08
Duplicate Lab Control Sample	RQ1503633-03	I:\ACQUDATA\5973B\DATA\042015\DK885.D\	4/20/15 16:37
MRC-MW-62C-041315	R1502645-004	I:\ACQUDATA\5973B\DATA\042015\DK886.D\	4/20/15 17:06
MRC-MW-62A-041315	R1502645-006	I:\ACQUDATA\5973B\DATA\042015\DK887.D\	4/20/15 17:35

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	4/15/15
		Date Analyzed:	4/20/15 15:38
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503633-01	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441283
Prep Method:	EPA 3510C	**Extraction Lot:**	233594
Data File Name:	I:\ACQUDATA\5973B\DATA\042015\DK883.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0017	U	0.0050	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0050	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0034	U	0.0050	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.013**		0.010	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	**0.022**		0.010	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	94	63-119	4/20/15 15:38	
4,4'-DDT	96	62-181	4/20/15 15:38	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/20/15

Lab Control Sample Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method: 680
Prep Method: EPA 3510C

Units: µg/L
Basis: NA

Extraction Lot: 233594

	Lab Control Sample RQ1503633-02			Duplicate Lab Control Sample RQ1503633-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Monochlorobiphenyls, Total	0.154	0.250	62	0.150	0.250	60	34 - 137	3	30
Dichlorobiphenyls, Total	0.174	0.250	69	0.159	0.250	63	37 - 139	9	30
Trichlorobiphenyls, Total	0.170	0.250	68	0.162	0.250	65	10 - 173	5	30
Tetrachlorobiphenyls, Total	0.325	0.500	65	0.325	0.500	65	14 - 153	<1	30
Pentachlorobiphenyls, Total	0.386	0.500	77	0.359	0.500	72	10 - 180	7	30
Hexachlorobiphenyls, Total	0.342	0.500	68	0.351	0.500	70	11 - 160	3	30
Heptachlorobiphenyls, Total	0.500	0.750	67	0.515	0.750	69	53 - 120	3	30
Octachlorobiphenyls, Total	0.570	0.750	76	0.543	0.750	72	57 - 125	5	30
Decachlorobiphenyls, Total	0.616	1.25	49	0.830	1.25	66	29 - 162	30	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Analyzed:**	4/23/15 09:51
Sample Matrix:	Water	**Date Extracted:**	4/22/15

Method Blank Summary

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Sample Name:	Method Blank	**Instrument ID:**	R-MS-52
Lab Code:	RQ1503970-01	**File ID:**	I:\ACQUDATA\5973B\DATA\042315\DK895.D\
Analytical Method:	680		
Prep Method:	EPA 3510C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1503970-02	I:\ACQUDATA\5973B\DATA\042315\DK896.D\	4/23/15 10:20
Duplicate Lab Control Sample	RQ1503970-03	I:\ACQUDATA\5973B\DATA\042315\DK897.D\	4/23/15 10:50
MRC-MW-62C-041315RE	R1502645-004	I:\ACQUDATA\5973B\DATA\042315\DK898.D\	4/23/15 11:19
MRC-MW-62A-041315RE	R1502645-006	I:\ACQUDATA\5973B\DATA\042315\DK899.D\	4/23/15 11:48

Reanalyses not used.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	4/22/15
		Date Analyzed:	4/23/15 09:51
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1503970-01	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	441750
Prep Method:	EPA 3510C	**Extraction Lot:**	234094
Data File Name:	I:\ACQUDATA\5973B\DATA\042315\DK895.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0017	U	0.0050	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0044	U	0.0050	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0034	U	0.0050	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.0054	U	0.010	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0088	U	0.010	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.011	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.0084	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.018	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	82	63-119	4/23/15 09:51	
4,4'-DDT	98	62-181	4/23/15 09:51	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/23/15

Lab Control Sample Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method: 680
Prep Method: EPA 3510C

Units: µg/L
Basis: NA

Extraction Lot: 234094

	Lab Control Sample RQ1503970-02			Duplicate Lab Control Sample RQ1503970-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Monochlorobiphenyls, Total	0.145	0.250	58	0.155	0.250	62	34 - 137	7	30
Dichlorobiphenyls, Total	0.150	0.250	60	0.165	0.250	66	37 - 139	10	30
Trichlorobiphenyls, Total	0.155	0.250	62	0.165	0.250	66	10 - 173	6	30
Tetrachlorobiphenyls, Total	0.300	0.500	60	0.315	0.500	63	14 - 153	5	30
Pentachlorobiphenyls, Total	0.350	0.500	70	0.370	0.500	74	10 - 180	6	30
Hexachlorobiphenyls, Total	0.335	0.500	67	0.355	0.500	71	11 - 160	6	30
Heptachlorobiphenyls, Total	0.520	0.750	69	0.535	0.750	71	53 - 120	3	30
Octachlorobiphenyls, Total	0.525	0.750	70	0.555	0.750	74	57 - 125	6	30
Decachlorobiphenyls, Total	0.875	1.25	70	0.930	1.25	74	29 - 162	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15 10:25

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\042015\DK872.D\
Instrument ID: R-MS-52

Analytical Method: 680
Analysis Lot: 441283

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
127	198	40	60	46.18	59128	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	128040	Pass
199	198	5	9	7.06	9044	Pass
275	198	10	30	26.62	34088	Pass
365	198	1	100	4.10	5244	Pass
441	443	0.01	100	86.74	15061	Pass
442	198	40	100	66.12	84661	Pass
443	442	17	23	20.51	17364	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
SSTD000	CAL STD 00	I:\ACQUDATA\5973B\DATA\042015\DK874.D\	4/20/15 11:14	
SSTD001	CAL STD 0	I:\ACQUDATA\5973B\DATA\042015\DK875.D\	4/20/15 11:44	
SSTD005	CAL STD 0.5	I:\ACQUDATA\5973B\DATA\042015\DK876.D\	4/20/15 12:13	
SSTD010	CAL STD 1.0	I:\ACQUDATA\5973B\DATA\042015\DK877.D\	4/20/15 12:43	
SSTD015	CAL STD 1.5	I:\ACQUDATA\5973B\DATA\042015\DK878.D\	4/20/15 13:12	
SSTD020	CAL STD 2.0	I:\ACQUDATA\5973B\DATA\042015\DK879.D\	4/20/15 13:41	
SSTD030	CAL STD 3.0	I:\ACQUDATA\5973B\DATA\042015\DK880.D\	4/20/15 14:10	
ICV	ICV	I:\ACQUDATA\5973B\DATA\042015\DK881.D\	4/20/15 14:40	
Continuing Calibration Verification	RQ1503921-02	I:\ACQUDATA\5973B\DATA\042015\DK882.D\	4/20/15 15:09	
Method Blank	RQ1503633-01	I:\ACQUDATA\5973B\DATA\042015\DK883.D\	4/20/15 15:38	
Lab Control Sample	RQ1503633-02	I:\ACQUDATA\5973B\DATA\042015\DK884.D\	4/20/15 16:08	
Duplicate Lab Control Sample	RQ1503633-03	I:\ACQUDATA\5973B\DATA\042015\DK885.D\	4/20/15 16:37	
MRC-MW-62C-041315	R1502645-004	I:\ACQUDATA\5973B\DATA\042015\DK886.D\	4/20/15 17:06	
MRC-MW-62A-041315	R1502645-006	I:\ACQUDATA\5973B\DATA\042015\DK887.D\	4/20/15 17:35	
Continuing Cal. VerificationCCVA	RQ1503921-03	I:\ACQUDATA\5973B\DATA\042015\DK888.D\	4/20/15 18:05	

Response Factor Report 5973-B

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration

Calibration Files
00 =DK874.D 0 =DK875.D 0.5 =DK876.D
1.0 =DK877.D 1.5 =DK878.D 2.0 =DK879.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
1)	IR	d10-Phenanthrene	----------ISTD----------							
2)	IR	d12-Chrysene	----------ISTD----------							
3)	TCM	Total Monochlorobip	0.795	0.822	0.738	0.687	0.643	0.634	0.701	12.45
4)	TCM	Total Dichlorobiphe	0.597	0.602	0.567	0.520	0.491	0.487	0.532	10.73
5)	SC	SURR1, gamma-BHC	0.098	0.109	0.102	0.098	0.099	0.102	0.101	3.66
6)	TCM	Total Trichlorobiph	0.402	0.408	0.398	0.362	0.351	0.352	0.372	8.22
7)	TCM	Total Tetrachlorobi	0.250	0.256	0.237	0.225	0.216	0.216	0.229	8.76
8)	TC	RT #104 (CL5)	0.170	0.173	0.168	0.154	0.148	0.153	0.159	7.31
9)	TCM	Total Pentachlorobi	0.187	0.194	0.187	0.175	0.172	0.178	0.180	5.18
10)	TCM	Total Hexachlorobip	0.175	0.170	0.165	0.155	0.148	0.154	0.159	6.68
11)	TC	RT #77 (CL4)	0.345	0.356	0.346	0.327	0.324	0.325	0.330	6.89
12)	TCM	Total Heptachlorobi	0.137	0.143	0.134	0.125	0.125	0.128	0.130	5.83
13)	SC	SURR2, 4-4'-DDT	0.192	0.221	0.243	0.224	0.266	0.323	0.258	20.67#Q
14)	TCM	Total Octachlorobip	0.090	0.094	0.091	0.085	0.085	0.085	0.088	4.50
15)	TC	Total Nonachlorobip	0.066	0.071	0.073	0.066	0.071	0.073	0.070	4.11
16)	TCM	Total Decachlorobip	0.051	0.054	0.051	0.048	0.050	0.055	0.052	5.21
17)	L1	CL1 - #1							0.000	-1.00
18)	L1	CL1 - #2							0.000	-1.00
19)	L1	CL1 - #3							0.000	-1.00
20)	L1	CL1 - #4							0.000	-1.00
21)	L1	CL1 - #5							0.000	-1.00
22)	L1	CL1 - #6							0.000	-1.00
23)	L1	CL1 - #7							0.000	-1.00
24)	L1	CL1 - #8							0.000	-1.00
25)	L1	CL1 - #9							0.000	-1.00
26)	L1	CL1 - #10							0.000	-1.00
27)	L1	MonoCB - Total	0.795	0.822	0.738	0.687	0.643	0.634	0.701	12.45
28)	L2	CL2 - #1							0.000	-1.00
29)	L2	CL2 - #2							0.000	-1.00
30)	L2	CL2 - #3							0.000	-1.00
31)	L2	CL2 - #4							0.000	-1.00
32)	L2	CL2 - #5							0.000	-1.00
33)	L2	CL2 - #6							0.000	-1.00
34)	L2	CL2 - #7							0.000	-1.00
35)	L2	CL2 - #8							0.000	-1.00
36)	L2	CL2 - #9							0.000	-1.00
37)	L2	CL2 - #10							0.000	-1.00
38)	L2	DiCB - Total	0.597	0.602	0.567	0.520	0.491	0.487	0.532	10.73
39)	L3	CL3 - #1							0.000	-1.00
40)	L3	CL3 - #2							0.000	-1.00
41)	L3	CL3 - #3							0.000	-1.00
42)	L3	CL3 - #4							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-B

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration

Calibration Files
00 =DK874.D 0 =DK875.D 0.5 =DK876.D
1.0 =DK877.D 1.5 =DK878.D 2.0 =DK879.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
43)	L3	CL3 - #5							0.000	-1.00
44)	L3	CL3 - #6							0.000	-1.00
45)	L3	CL3 - #7							0.000	-1.00
46)	L3	CL3 - #8							0.000	-1.00
47)	L3	CL3 - #9							0.000	-1.00
48)	L3	CL3 - #10							0.000	-1.00
49)	L3	CL3 - #11							0.000	-1.00
50)	L3	CL3 - #12							0.000	-1.00
51)	L3	CL3 - #13							0.000	-1.00
52)	L3	TriCB - Total	0.402	0.408	0.398	0.362	0.351	0.352	0.372	8.22
53)	L4	CL4 - #1							0.000	-1.00
54)	L4	CL4 - #2							0.000	-1.00
55)	L4	CL4 - #3							0.000	-1.00
56)	L4	CL4 - #4							0.000	-1.00
57)	L4	CL4 - #5							0.000	-1.00
58)	L4	CL4 - #6							0.000	-1.00
59)	L4	CL4 - #7							0.000	-1.00
60)	L4	CL4 - #8							0.000	-1.00
61)	L4	CL4 - #9							0.000	-1.00
62)	L4	CL4 - #10							0.000	-1.00
63)	L4	CL4 - #11							0.000	-1.00
64)	L4	CL4 - #12							0.000	-1.00
65)	L4	CL4 - #13							0.000	-1.00
66)	L4	CL4 - #14							0.000	-1.00
67)	L4	CL4 - #15							0.000	-1.00
68)	L4	TetraCB - Total	0.250	0.256	0.237	0.225	0.216	0.216	0.229	8.76
69)	L5	CL5 - #1							0.000	-1.00
70)	L5	CL5 - #2							0.000	-1.00
71)	L5	CL5 - #3							0.000	-1.00
72)	L5	CL5 - #4							0.000	-1.00
73)	L5	CL5 - #5							0.000	-1.00
74)	L5	CL5 - #6							0.000	-1.00
75)	L5	CL5 - #7							0.000	-1.00
76)	L5	CL5 - #8							0.000	-1.00
77)	L5	CL5 - #9							0.000	-1.00
78)	L5	CL5 - #10							0.000	-1.00
79)	L5	CL5 - #11							0.000	-1.00
80)	L5	CL5 - #12							0.000	-1.00
81)	L5	CL5 - #13							0.000	-1.00
82)	L5	CL5 - #14							0.000	-1.00
83)	L5	CL5 - #15							0.000	-1.00
84)	L5	PentaCB - Total	0.187	0.194	0.187	0.175	0.172	0.178	0.180	5.18
85)	L6	CL6 - #1							0.000	-1.00
86)	L6	CL6 - #2							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration

Calibration Files
00 =DK874.D 0 =DK875.D 0.5 =DK876.D
1.0 =DK877.D 1.5 =DK878.D 2.0 =DK879.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
87)	L6	CL6 - #3							0.000	-1.00
88)	L6	CL6 - #4							0.000	-1.00
89)	L6	CL6 - #5							0.000	-1.00
90)	L6	CL6 - #6							0.000	-1.00
91)	L6	CL6 - #7							0.000	-1.00
92)	L6	CL6 - #8							0.000	-1.00
93)	L6	CL6 - #9							0.000	-1.00
94)	L6	CL6 - #10							0.000	-1.00
95)	L6	CL6 - #11							0.000	-1.00
96)	L6	CL6 - #12							0.000	-1.00
97)	L6	CL6 - #13							0.000	-1.00
98)	L6	CL6 - #14							0.000	-1.00
99)	L6	CL6 - #15							0.000	-1.00
100)	L6	HexaCB - Total	0.175	0.170	0.165	0.155	0.148	0.154	0.159	6.68
101)	L7	CL7 - #1							0.000	-1.00
102)	L7	CL7 - #2							0.000	-1.00
103)	L7	CL7 - #3							0.000	-1.00
104)	L7	CL7 - #4							0.000	-1.00
105)	L7	CL7 - #5							0.000	-1.00
106)	L7	CL7 - #6							0.000	-1.00
107)	L7	CL7 - #7							0.000	-1.00
108)	L7	CL7 - #8							0.000	-1.00
109)	L7	CL7 - #9							0.000	-1.00
110)	L7	CL7 - #10							0.000	-1.00
111)	L7	HeptaCB - Total	0.137	0.143	0.134	0.125	0.125	0.128	0.130	5.83
112)	L8	CL8 - #1							0.000	-1.00
113)	L8	CL8 - #2							0.000	-1.00
114)	L8	CL8 - #3							0.000	-1.00
115)	L8	CL8 - #4							0.000	-1.00
116)	L8	CL8 - #5							0.000	-1.00
117)	L8	CL8 - #6							0.000	-1.00
118)	L8	CL8 - #7							0.000	-1.00
119)	L8	CL8 - #8							0.000	-1.00
120)	L8	OctaCB - Total	0.090	0.094	0.091	0.085	0.085	0.085	0.088	4.50
121)	L9	CL9 - #1							0.000	-1.00
122)	L9	CL9 - #2							0.000	-1.00
123)	L9	CL9 - #3							0.000	-1.00
124)	L9	CL9 - #4							0.000	-1.00
125)	L9	CL9 - #5							0.000	-1.00
126)	L9	NonaCB - Total	0.066	0.071	0.073	0.066	0.071	0.073	0.070	4.11
127)	L10	CL10 - #1							0.000	-1.00
128)	L10	CL10 - #2							0.000	-1.00
129)	L10	CL10 - #3							0.000	-1.00
130)	L10	CL10 - #4							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

00474

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration

Calibration Files
00 =DK874.D 0 =DK875.D 0.5 =DK876.D
1.0 =DK877.D 1.5 =DK878.D 2.0 =DK879.D

	Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
131)	L10 CL10 - #5							0.000	-1.00
132)	L10 DecaCB - Total	0.051	0.054	0.051	0.048	0.050	0.055	0.052	5.21

(#) = Out of Range ### Number of calibration levels exceeded format ###

00475

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK881.D Vial: 11
Acq On : 20 Apr 2015 2:40 pm Operator: J.Misiurewicz
Sample : ICV Inst : 5973-B
Misc : Initial Calibration 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	95	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	97	0.00
3	TCM	Total Monochlorobiphenyls	0.701	0.698	0.4	99	0.00
4	TCM	Total Dichlorobiphenyls	0.532	0.534	-0.4	100	0.00
5	SC	SURR1, gamma-BHC	0.101	0.000	100.0#	0#	-10.96#
6	TCM	Total Trichlorobiphenyls	0.372	0.388	-4.3	104	0.00
7	TCM	Total Tetrachlorobiphenyls	0.229	0.227	0.9	98	0.00
8	TC	RT #104 (CL5)	0.159	0.155	2.5	98	0.00
9	TCM	Total Pentachlorobiphenyls	0.180	0.179	0.6	100	0.00
10	TCM	Total Hexachlorobiphenyls	0.159	0.159	0.0	100	0.00
11	TC	RT #77 (CL4)	0.330	0.339	-2.7	101	0.00
12	TCM	Total Heptachlorobiphenyls	0.130	0.133	-2.3	103	0.00
13	SC	SURR2, 4-4'-DDT	0.258	0.000	100.0#	0#	-16.06#
14	TCM	Total Octachlorobiphenyls	0.088	0.087	1.1	100	0.00
15	TC	Total Nonachlorobiphenyls R	0.070	0.071	-1.4	105	0.00
16	TCM	Total Decachlorobiphenyl	0.052	0.052	0.0	106	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.31#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.31#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.31#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.31#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.31#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.31#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.31#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.31#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.31#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.31#
27	L1	MonoCB - Total	0.701	0.000	100.0#	0#	-8.31#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.36#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.36#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.36#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.36#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.36#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.36#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.36#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.36#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.36#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.36#
38	L2	DiCB - Total	0.532	0.000	100.0#	0#	-10.36#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.77#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.77#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.77#

(#) = Out of Range

00511

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK881.D Vial: 11
Acq On : 20 Apr 2015 2:40 pm Operator: J.Misiurewicz
Sample : ICV Inst : 5973-B
Misc : Initial Calibration 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

#13 only

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	95	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	97	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.100	0.0	99	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.100	0.0	100	0.00
5	SC	SURR1, gamma-BHC	0.200	0.000	100.0#	0	-10.96#
6	TCM	Total Trichlorobiphenyls	0.100	0.104	-4.0	104	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.199	0.5	98	0.00
8	TC	RT #104 (CL5)	0.200	0.195	2.5	98	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.199	0.5	100	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.200	0.0	100	0.00
11	TC	RT #77 (CL4)	0.200	0.205	-2.5	101	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.306	-2.0	103	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.004	98.0#	0	-16.06#
14	TCM	Total Octachlorobiphenyls	0.300	0.297	1.0	100	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.407	-1.7	105	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.504	-0.8	106	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.31#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.31#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.31#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.31#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.31#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.31#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.31#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.31#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.31#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.31#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.31#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.36#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.36#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.36#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.36#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.36#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.36#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.36#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.36#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.36#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.36#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.36#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.77#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.77#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.77#

(#) = Out of Range

00512

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\042015\DK881.D Vial: 11
Acq On : 20 Apr 2015 2:40 pm Operator: J.Misiurewicz
Sample : ICV Inst : 5973-B
Misc : Initial Calibration 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Apr 21 8:09 2015 Quant Results File: 6800420.RES

Quant Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.18	188	307800	0.75	ppm	0.00
2) d12-Chrysene	16.90	240	336726	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	0.00	219	0d	0.00	ppm	
Spiked Amount 1.000	Range 63 - 119		Recovery = 0.00%#			
13) SURR2, 4-4'-DDT	0.00	235	0d	0.00	ppm	
Spiked Amount 1.000	Range 62 - 181		Recovery = 0.00%#			
Target Compounds						Qvalue
3) Total Monochlorobiphenyls	8.31	188	31350	0.100	ppm	94
4) Total Dichlorobiphenyls	10.36	222	23982	0.100	ppm	97
6) Total Trichlorobiphenyls	11.77	256	17428	0.104	ppm	94
7) Total Tetrachlorobiphenyls	11.99	292	20424	0.199	ppm	99
8) RT #104 (CL5)	12.93	324	13877	0.195	ppm	97
9) Total Pentachlorobiphenyls	14.65	326	16114	0.199	ppm	100
10) Total Hexachlorobiphenyls	14.80	360	14274	0.200	ppm	99
11) RT #77 (CL4)	14.85	292	30398	0.205	ppm	97
12) Total Heptachlorobiphenyls	15.50	394	17909	0.306	ppm	86
14) Total Octachlorobiphenyls	16.97	428	11681	0.297	ppm	94
15) Total Nonachlorobiphenyls	18.27	464	12811	0.407	ppm	98
16) Total Decachlorobiphenyl	19.64	498	11753	0.504	ppm	98

(#) = qualifier out of range (m) = manual integration

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK882.D Vial: 12
Acq On : 20 Apr 2015 3:09 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	97	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	101	0.00
3	TCM	Total Monochlorobiphenyls	0.701	0.669	4.6	98	0.00
4	TCM	Total Dichlorobiphenyls	0.532	0.506	4.9	98	0.00
5	SC	SURR1, gamma-BHC	0.101	0.093	7.9	96	0.00
6	TCM	Total Trichlorobiphenyls	0.372	0.366	1.6	102	0.01
7	TCM	Total Tetrachlorobiphenyls	0.229	0.225	1.7	100	0.00
8	TC	RT #104 (CL5)	0.159	0.150	5.7	98	0.00
9	TCM	Total Pentachlorobiphenyls	0.180	0.172	4.4	99	0.00
10	TCM	Total Hexachlorobiphenyls	0.159	0.151	5.0	98	0.00
11	TC	RT #77 (CL4)	0.330	0.320	3.0	98	0.00
12	TCM	Total Heptachlorobiphenyls	0.130	0.123	5.4	99	0.00
13	SC	SURR2, 4-4'-DDT	0.258	0.214	17.1	96	0.00
14	TCM	Total Octachlorobiphenyls	0.088	0.082	6.8	97	0.00
15	TC	Total Nonachlorobiphenyls R	0.070	0.068	2.9	104	0.00
16	TCM	Total Decachlorobiphenyl	0.052	0.047	9.6	99	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.31#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.31#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.31#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.31#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.31#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.31#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.31#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.31#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.31#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.31#
27	L1	MonoCB - Total	0.701	0.000	100.0#	0#	-8.31#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.36#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.36#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.36#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.36#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.36#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.36#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.36#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.36#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.36#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.36#
38	L2	DiCB - Total	0.532	0.000	100.0#	0#	-10.36#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.77#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.77#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.77#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK882.D Vial: 12
Acq On : 20 Apr 2015 3:09 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	97	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	101	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.095	5.0	98	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.095	5.0	98	0.00
5	SC	SURR1, gamma-BHC	0.200	0.184	8.0	96	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.098	2.0	102	0.01
7	TCM	Total Tetrachlorobiphenyls	0.200	0.196	2.0	100	0.00
8	TC	RT #104 (CL5)	0.200	0.189	5.5	98	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.191	4.5	99	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.189	5.5	98	0.00
11	TC	RT #77 (CL4)	0.200	0.194	3.0	98	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.283	5.7	99	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.174	13.0	96	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.280	6.7	97	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.390	2.5	104	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.452	9.6	99	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.31#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.31#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.31#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.31#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.31#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.31#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.31#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.31#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.31#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.31#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.31#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.36#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.36#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.36#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.36#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.36#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.36#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.36#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.36#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.36#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.36#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.36#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.77#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.77#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.77#

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\042015\DK882.D Vial: 12
Acq On : 20 Apr 2015 3:09 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Apr 21 8:34 2015 Quant Results File: 6800420.RES

Quant Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.18	188	314179	0.75	ppm	0.00
2) d12-Chrysene	16.89	240	348197	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.96	219	8638	0.18	ppm	0.00
Spiked Amount 1.000	Range 63 - 119		Recovery = 18.00%#			
13) SURR2, 4-4'-DDT	16.06	235	19886	0.17	ppm	0.00
Spiked Amount 1.000	Range 62 - 181		Recovery = 17.00%#			
Target Compounds						Qvalue
3) Total Monochlorobiphenyls	8.31	188	31065	0.095	ppm	92
4) Total Dichlorobiphenyls	10.36	222	23473	0.095	ppm	95
6) Total Trichlorobiphenyls	11.78	256	16986	0.098	ppm	92
7) Total Tetrachlorobiphenyls	11.99	292	20849	0.196	ppm	100
8) RT #104 (CL5)	12.93	324	13951	0.189	ppm	98
9) Total Pentachlorobiphenyls	14.65	326	15955	0.191	ppm	98
10) Total Hexachlorobiphenyls	14.80	360	13997	0.189	ppm	98
11) RT #77 (CL4)	14.85	292	29675m	0.194	ppm	
12) Total Heptachlorobiphenyls	15.50	394	17123	0.283	ppm	89
14) Total Octachlorobiphenyls	16.97	428	11393	0.280	ppm	99
15) Total Nonachlorobiphenyls	18.27	464	12716	0.390	ppm	99
16) Total Decachlorobiphenyl	19.64	498	10901	0.452	ppm	97

(#) = qualifier out of range (m) = manual integration

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK888.D Vial: 18
Acq On : 20 Apr 2015 6:05 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	88	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	94	0.00
3	TCM	Total Monochlorobiphenyls	0.701	0.617	12.0	84	0.00
4	TCM	Total Dichlorobiphenyls	0.532	0.491	7.7	89	0.00
5	SC	SURR1, gamma-BHC	0.101	0.097	4.0	93	0.00
6	TCM	Total Trichlorobiphenyls	0.372	0.366	1.6	95	0.01
7	TCM	Total Tetrachlorobiphenyls	0.229	0.210	8.3	88	0.00
8	TC	RT #104 (CL5)	0.159	0.145	8.8	88	0.00
9	TCM	Total Pentachlorobiphenyls	0.180	0.173	3.9	93	0.00
10	TCM	Total Hexachlorobiphenyls	0.159	0.147	7.5	89	0.00
11	TC	RT #77 (CL4)	0.330	0.325	1.5	93	0.00
12	TCM	Total Heptachlorobiphenyls	0.130	0.122	6.2	91	0.00
13	SC	SURR2, 4-4'-DDT	0.258	0.254	1.6	107	0.00
14	TCM	Total Octachlorobiphenyls	0.088	0.082	6.8	91	0.00
15	TC	Total Nonachlorobiphenyls R	0.070	0.069	1.4	98	0.00
16	TCM	Total Decachlorobiphenyl	0.052	0.049	5.8	95	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.31#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.31#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.31#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.31#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.31#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.31#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.31#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.31#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.31#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.31#
27	L1	MonoCB - Total	0.701	0.000	100.0#	0#	-8.31#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.36#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.36#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.36#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.36#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.36#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.36#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.36#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.36#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.36#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.36#
38	L2	DiCB - Total	0.532	0.000	100.0#	0#	-10.36#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.77#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.77#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.77#

(#) = Out of Range

00521

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042015\DK888.D Vial: 18
Acq On : 20 Apr 2015 6:05 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

#13 only

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	88	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	94	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.088	12.0	84	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.092	8.0	89	0.00
5	SC	SURR1, gamma-BHC	0.200	0.193	3.5	93	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.099	1.0	95	0.01
7	TCM	Total Tetrachlorobiphenyls	0.200	0.184	8.0	88	0.00
8	TC	RT #104 (CL5)	0.200	0.183	8.5	88	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.192	4.0	93	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.185	7.5	89	0.00
11	TC	RT #77 (CL4)	0.200	0.197	1.5	93	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.280	6.7	91	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.205	-2.5	107	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.280	6.7	91	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.392	2.0	98	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.469	6.2	95	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.31#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.31#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.31#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.31#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.31#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.31#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.31#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.31#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.31#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.31#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.31#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.36#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.36#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.36#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.36#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.36#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.36#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.36#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.36#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.36#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.36#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.36#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.77#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.77#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.77#

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\042015\DK888.D Vial: 18
Acq On : 20 Apr 2015 6:05 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Apr 21 9:11 2015 Quant Results File: 6800420.RES

Quant Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.18	188	285051	0.75	ppm	0.00
2) d12-Chrysene	16.89	240	324641	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.96	219	8427	0.19	ppm	0.00
Spiked Amount 1.000	Range 63 - 119		Recovery = 19.00%#			
13) SURR2, 4-4'-DDT	16.06	235	21993	0.20	ppm	0.00
Spiked Amount 1.000	Range 62 - 181		Recovery = 20.00%#			
Target Compounds						Qvalue
3) Total Monochlorobiphenyls	8.31	188	26717	0.088	ppm	92
4) Total Dichlorobiphenyls	10.36	222	21255	0.092	ppm	93
6) Total Trichlorobiphenyls	11.78	256	15864	0.099	ppm	94
7) Total Tetrachlorobiphenyls	11.99	292	18206	0.184	ppm	96
8) RT #104 (CL5)	12.93	324	12544	0.183	ppm	99
9) Total Pentachlorobiphenyls	14.65	326	15018	0.192	ppm	96
10) Total Hexachlorobiphenyls	14.80	360	12759	0.185	ppm	99
11) RT #77 (CL4)	14.85	292	28132m	0.197	ppm	
12) Total Heptachlorobiphenyls	15.50	394	15798	0.280	ppm	87
14) Total Octachlorobiphenyls	16.97	428	10630	0.280	ppm	100
15) Total Nonachlorobiphenyls	18.27	464	11909	0.392	ppm	97
16) Total Decachlorobiphenyl	19.64	498	10531	0.469	ppm	95

(#) = qualifier out of range (m) = manual integration

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/23/15 08:59

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\042315\DK893.D\
Instrument ID: R-MS-52

Analytical Method: 680
Analysis Lot: 441750

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
127	198	40	60	46.37	400149	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	862912	Pass
199	198	5	9	7.29	62896	Pass
275	198	10	30	29.64	255789	Pass
365	198	1	100	4.47	38538	Pass
441	443	0.01	100	91.95	118568	Pass
442	198	40	100	72.38	624533	Pass
443	442	17	23	20.65	128952	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1504081-02	I:\ACQUDATA\5973B\DATA\042315\DK894.D\	4/23/15 09:18	
Method Blank	RQ1503970-01	I:\ACQUDATA\5973B\DATA\042315\DK895.D\	4/23/15 09:51	
Lab Control Sample	RQ1503970-02	I:\ACQUDATA\5973B\DATA\042315\DK896.D\	4/23/15 10:20	
Duplicate Lab Control Sample	RQ1503970-03	I:\ACQUDATA\5973B\DATA\042315\DK897.D\	4/23/15 10:50	
MRC-MW-62C-041315RE	R1502645-004	I:\ACQUDATA\5973B\DATA\042315\DK898.D\	4/23/15 11:19	
MRC-MW-62A-041315RE	R1502645-006	I:\ACQUDATA\5973B\DATA\042315\DK899.D\	4/23/15 11:48	
Continuing Cal. VerificationCCVA	RQ1504081-03	I:\ACQUDATA\5973B\DATA\042315\DK900.D\	4/23/15 12:18	

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042315\DK894.D Vial: 3
Acq On : 23 Apr 2015 9:18 am Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	110	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	107	0.00
3	TCM	Total Monochlorobiphenyls	0.701	0.689	1.7	107	0.00
4	TCM	Total Dichlorobiphenyls	0.532	0.527	0.9	109	0.00
5	SC	SURR1, gamma-BHC	0.101	0.103	-2.0	112	0.00
6	TCM	Total Trichlorobiphenyls	0.372	0.375	-0.8	111	0.01
7	TCM	Total Tetrachlorobiphenyls	0.229	0.237	-3.5	113	0.00
8	TC	RT #104 (CL5)	0.159	0.155	2.5	108	0.00
9	TCM	Total Pentachlorobiphenyls	0.180	0.175	2.8	107	0.00
10	TCM	Total Hexachlorobiphenyls	0.159	0.155	2.5	107	0.00
11	TC	RT #77 (CL4)	0.330	0.334	-1.2	109	0.00
12	TCM	Total Heptachlorobiphenyls	0.130	0.128	1.5	110	0.00
13	SC	SURR2, 4-4'-DDT	0.258	0.236	8.5	113	0.00
14	TCM	Total Octachlorobiphenyls	0.088	0.085	3.4	108	0.00
15	TC	Total Nonachlorobiphenyls R	0.070	0.068	2.9	110	0.00
16	TCM	Total Decachlorobiphenyl	0.052	0.050	3.8	112	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.31#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.31#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.31#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.31#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.31#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.31#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.31#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.31#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.31#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.31#
27	L1	MonoCB - Total	0.701	0.000	100.0#	0#	-8.31#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.36#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.36#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.36#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.36#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.36#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.36#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.36#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.36#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.36#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.36#
38	L2	DiCB - Total	0.532	0.000	100.0#	0#	-10.36#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.77#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.77#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.77#

(#) = Out of Range

00527

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042315\DK894.D Vial: 3
Acq On : 23 Apr 2015 9:18 am Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	110	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	107	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.098	2.0	107	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.099	1.0	109	0.00
5	SC	SURR1, gamma-BHC	0.200	0.203	-1.5	112	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.101	-1.0	111	0.01
7	TCM	Total Tetrachlorobiphenyls	0.200	0.207	-3.5	113	0.00
8	TC	RT #104 (CL5)	0.200	0.196	2.0	108	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.194	3.0	107	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.195	2.5	107	0.00
11	TC	RT #77 (CL4)	0.200	0.202	-1.0	109	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.295	1.7	110	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.191	4.5	113	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.292	2.7	108	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.387	3.3	110	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.482	3.6	112	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.31#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.31#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.31#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.31#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.31#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.31#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.31#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.31#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.31#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.31#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.31#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.36#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.36#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.36#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.36#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.36#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.36#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.36#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.36#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.36#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.36#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.36#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.77#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.77#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.77#

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\042315\DK894.D Vial: 3
Acq On : 23 Apr 2015 9:18 am Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Apr 23 14:23 2015 Quant Results File: 6800420.RES

Quant Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.18	188	356999	0.75	ppm	0.00
2) d12-Chrysene	16.90	240	370572	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.96	219	10129	0.20	ppm	0.00
Spiked Amount 1.000	Range 63 - 119		Recovery = 20.00%#			
13) SURR2, 4-4'-DDT	16.06	235	23313	0.19	ppm	0.00
Spiked Amount 1.000	Range 62 - 181		Recovery = 19.00%#			
Target Compounds						Qvalue
3) Total Monochlorobiphenyls	8.31	188	34029	0.098	ppm	96
4) Total Dichlorobiphenyls	10.36	222	26015	0.099	ppm	97
6) Total Trichlorobiphenyls	11.78	256	18505	0.101	ppm	91
7) Total Tetrachlorobiphenyls	11.99	292	23409	0.207	ppm	100
8) RT #104 (CL5)	12.93	324	15329	0.196	ppm	100
9) Total Pentachlorobiphenyls	14.65	326	17254	0.194	ppm	97
10) Total Hexachlorobiphenyls	14.80	360	15357	0.195	ppm	99
11) RT #77 (CL4)	14.85	292	33001m	0.202	ppm	
12) Total Heptachlorobiphenyls	15.50	394	19021	0.295	ppm	88
14) Total Octachlorobiphenyls	16.97	428	12643	0.292	ppm	98
15) Total Nonachlorobiphenyls	18.27	464	13419	0.387	ppm	100
16) Total Decachlorobiphenyl	19.66	498	12358	0.482	ppm	86

(#) = qualifier out of range (m) = manual integration

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042315\DK900.D Vial: 9
Acq On : 23 Apr 2015 12:18 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	105	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	109	0.00
3	TCM	Total Monochlorobiphenyls	0.701	0.627	10.6	100	0.00
4	TCM	Total Dichlorobiphenyls	0.532	0.516	3.0	109	0.00
5	SC	SURR1, gamma-BHC	0.101	0.099	2.0	110	0.00
6	TCM	Total Trichlorobiphenyls	0.372	0.359	3.5	108	0.00
7	TCM	Total Tetrachlorobiphenyls	0.229	0.214	6.6	104	0.00
8	TC	RT #104 (CL5)	0.159	0.146	8.2	104	0.00
9	TCM	Total Pentachlorobiphenyls	0.180	0.175	2.8	109	0.00
10	TCM	Total Hexachlorobiphenyls	0.159	0.151	5.0	107	0.00
11	TC	RT #77 (CL4)	0.330	0.324	1.8	108	0.00
12	TCM	Total Heptachlorobiphenyls	0.130	0.127	2.3	111	0.00
13	SC	SURR2, 4-4'-DDT	0.258	0.271	-5.0	132	0.00
14	TCM	Total Octachlorobiphenyls	0.088	0.085	3.4	110	0.00
15	TC	Total Nonachlorobiphenyls R	0.070	0.073	-4.3	120	0.00
16	TCM	Total Decachlorobiphenyl	0.052	0.049	5.8	111	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.31#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.31#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.31#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.31#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.31#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.31#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.31#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.31#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.31#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.31#
27	L1	MonoCB - Total	0.701	0.000	100.0#	0#	-8.31#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.36#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.36#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.36#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.36#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.36#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.36#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.36#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.36#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.36#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.36#
38	L2	DiCB - Total	0.532	0.000	100.0#	0#	-10.36#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.77#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.77#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.77#

(#) = Out of Range

00533

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\042315\DK900.D Vial: 9
Acq On : 23 Apr 2015 12:18 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	105	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	109	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.089	11.0	100	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.097	3.0	109	0.00
5	SC	SURR1, gamma-BHC	0.200	0.196	2.0	110	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.096	4.0	108	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.187	6.5	104	0.00
8	TC	RT #104 (CL5)	0.200	0.184	8.0	104	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.194	3.0	109	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.190	5.0	107	0.00
11	TC	RT #77 (CL4)	0.200	0.197	1.5	108	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.293	2.3	111	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.217	-8.5	132	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.291	3.0	110	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.414	-3.5	120	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.470	6.0	111	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.31#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.31#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.31#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.31#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.31#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.31#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.31#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.31#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.31#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.31#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.31#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.36#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.36#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.36#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.36#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.36#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.36#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.36#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.36#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.36#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.36#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.36#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.77#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.77#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.77#

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\042315\DK900.D Vial: 9
Acq On : 23 Apr 2015 12:18 pm Operator: J.Misiurewicz
Sample : CCV Inst : 5973-B
Misc : CAL STD 1.0 680 PCB Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Apr 23 14:38 2015 Quant Results File: 6800420.RES

Quant Method : I:\ACQUDATA\5973B\METHODS\6800420.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Apr 21 08:02:27 2015
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.19	188	341851	0.75	ppm	0.00
2) d12-Chrysene	16.90	240	378522	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.96	219	9977	0.20	ppm	0.00
Spiked Amount 1.000	Range 63 - 119		Recovery = 20.00%#			
13) SURR2, 4-4'-DDT	16.06	235	27342	0.22	ppm	0.00
Spiked Amount 1.000	Range 62 - 181		Recovery = 22.00%#			
Target Compounds						Qvalue
3) Total Monochlorobiphenyls	8.31	188	31620	0.089	ppm	97
4) Total Dichlorobiphenyls	10.36	222	26030m	0.097	ppm	
6) Total Trichlorobiphenyls	11.77	256	18098	0.096	ppm	98
7) Total Tetrachlorobiphenyls	11.99	292	21588	0.187	ppm	100
8) RT #104 (CL5)	12.93	324	14738	0.184	ppm	98
9) Total Pentachlorobiphenyls	14.65	326	17660	0.194	ppm	98
10) Total Hexachlorobiphenyls	14.80	360	15260	0.190	ppm	99
11) RT #77 (CL4)	14.85	292	32746m	0.197	ppm	
12) Total Heptachlorobiphenyls	15.50	394	19294	0.293	ppm	91
14) Total Octachlorobiphenyls	16.97	428	12873	0.291	ppm	98
15) Total Nonachlorobiphenyls	18.27	464	14648	0.414	ppm	100
16) Total Decachlorobiphenyl	19.64	498	12318	0.470	ppm	99

(#) = qualifier out of range (m) = manual integration

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/20/15 15:09

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\042015\DK882.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1503921-02
Analysis Lot: 441283
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	314,179	11.18	348,197	16.89
	Upper Limit ==>	471,269	11.68	522,296	17.39
	Lower Limit ==>	219,925	10.68	243,738	16.39
	ICAL Result ==>	324,721	11.19	345,963	16.89
Associated Analyses					
Method Blank	RQ1503633-01	269,607	11.18	299,211	16.89
Lab Control Sample	RQ1503633-02	217,468*	11.20	315,265	16.90
Duplicate Lab Control Sample	RQ1503633-03	265,553	11.19	307,813	16.89
MRC-MW-62C-041315	R1502645-004	272,499	11.19	306,611	16.89
MRC-MW-62A-041315	R1502645-006	228,475	11.21	330,258	16.92
Continuing Cal. VerificationCCVA	RQ1503921-03	285,051	11.18	324,641	16.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247

Service Request: R1502645
Date Analyzed: 4/23/15 09:18

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\042315\DK894.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1504081-02
Analysis Lot: 441750
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	356,999	11.18	370,572	16.90
	Upper Limit ==>	535,499	11.68	555,858	17.40
	Lower Limit ==>	249,899	10.68	259,400	16.40
	ICAL Result ==>	324,721	11.19	345,963	16.89
Associated Analyses					
Method Blank	RQ1503970-01	324,544	11.18	361,133	16.89
Lab Control Sample	RQ1503970-02	295,897	11.18	332,118	16.89
Duplicate Lab Control Sample	RQ1503970-03	309,719	11.18	359,294	16.89
MRC-MW-62C-041315RE	R1502645-004	318,215	11.18	364,494	16.89
MRC-MW-62A-041315RE	R1502645-006	297,920	11.20	339,124	16.92
Continuing Cal. VerificationCCVA	RQ1504081-03	341,851	11.19	378,522	16.90

Results flagged with an asterisk (*) indicate values outside control criteria.

Preparation Information Benchsheet

Prep Run#: 233594 **Prep WorkFlow:** OrgExtAq(7) **Status:** Prepped
Team: Semivoa GCMS/DMURPHY **Prep Method:** EPA 3510C **Prep Date/Time:** 4/15/15 07:26 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1503633-01	MB		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/80334	
2	RQ1503633-02	LCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless •5ml	0.5000 mL/80334; ~~1.0000~~ mL/79860	4/15
3	RQ1503633-03	DLCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless •5ml	~~1.0000~~ mL/79860; 0.5000 mL/80334	
4	R1502645-004	MRC-MW-62C-041315	.02	1050mL	680/Pest PCB	8			0.50mL	orange-opaque	0.5000 mL/80334	
5	R1502645-006	MRC-MW-62A-041315	.02	1050mL	680/Pest PCB	8			0.50mL	yellow-cloudy	0.5000 mL/80334	

Spiking Solutions

Name: 680 Matrix Spike 0.5-2.0 ug/mL Inventory ID 79860 Logbook Ref: Expires On: 05/04/2015

Name: 680 PCB Surrogate 1 ug/mL Inventory ID 80334 Logbook Ref: Expires On: 05/04/2015

Preparation Materials

Eppendorf Pipette Repeater EXT #14 (61350) 2mL Graduated Vials (79960) Dichloromethane (Methylene Chloride) 99.9% MeCl2 canister (80036)

Prepared Sodium Sulfate Na2SO4 (80078)

Preparation Steps

Step:	Extraction	Step:	Concentration	Step:	Final Volume
Started:	4/15/15 07:26	Started:	4/15/15 12:55	Started:	4/15/15 14:15
Finished:	4/15/15 12:09	Finished:	4/15/15 14:00	Finished:	4/15/15 14:15
By:	DMURPHY	By:	SGOLBERG	By:	SGOLBERG
Comments		Comments		Comments	

Comments: _____

Reviewed By: _____ Date: _____ Spike Witness: SGOLBERG Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 234094 **Prep WorkFlow:** OrgExtAq(7) **Status:** Prepped
Team: Semivoa GCMS/DMURPHY **Prep Method:** EPA 3510C **Prep Date/Time:** 4/22/15 07:08 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1503970-01	MB		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/80334	
2	RQ1503970-02	LCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/79860; 0.5000 mL/80334	
3	RQ1503970-03	DLCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/79860; 0.5000 mL/80334	
4	R1502645-004RE	MRC-MW-62C-041315	.01	1060mL	680/Pest PCB	8			0.50mL	orange-opaque	0.5000 mL/80334	
5	R1502645-006RE	MRC-MW-62A-041315	.01	1060mL	680/Pest PCB	8			0.50mL	yellow-cloudy	0.5000 mL/80334	

Spiking Solutions

Name: 680 Matrix Spike 0.5-2.0 ug/mL Inventory ID 79860 Logbook Ref: Expires On: 05/04/2015

Name: 680 PCB Surrogate 1 ug/mL Inventory ID 80334 Logbook Ref: Expires On: 05/04/2015

Preparation Materials

Eppendorf Pipette Repeater EXT #14 (61350)

2mL Graduated Vials (79959)

Dichloromethane (Methylene Chloride) 99.9% MeCl2 canister (80036)

Prepared Sodium Sulfate Na2SO4 (80078)

Preparation Steps

Step:	Extraction	Step:	Concentration	Step:	Final Volume
Started:	4/22/15 07:08	Started:	4/22/15 14:15	Started:	4/22/15 15:41
Finished:	4/22/15 14:57	Finished:	4/22/15 15:15	Finished:	4/22/15 15:41
By:	DMURPHY	By:	SGOLBERG	By:	SGOLBERG
Comments		Comments		Comments	

Comments: _____

Reviewed By: _____ Date: 4/23 Spike Witness: MPEDRO Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

ALS Environmental

METALS

COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

Contract: R1502645 SDG No.: MRC-MW-32A-

Lab Code: _____ Case No.: _____ SAS No.: _____

SOW No.: SW846 CLP-M

Sample ID.	Lab Sample No.
MRC-MW-62C-041315	R1502645-004
MRC-MW-34B-041315	R1502645-005
MRC-MW-62A-041315	R1502645-006

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: See Attatched Case Narrative

Signature: Janice Jaeger Name: Janice Jaeger

Date: 5/15/15 Title: Project Chemist

00587

METALS

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DETECTION LIMITS

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: Optima ICP 3 Date: 1/12/2015

Flame AA ID Number: _____

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	PQL ug/L	MDL ug/L	M
Iron	259.939		100.0	8.7	P
Potassium	766.490		2000.0	44.4	P
Manganese	257.610		10.0	0.5	P

Comments: _____

METALS

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DETECTION LIMITS

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: PE ICPMS Date: 2/2/2015

Flame AA ID Number: _____

Furnace AA ID Number:

Analyte	Isotope	Back-ground	PQL ug/L	MDL ug/L	M
Antimony	123		1.00	0.304	MS
Arsenic	75		1.00	0.359	MS
Barium	137		1.00	0.034	MS
Beryllium	9		1.00	0.027	MS
Cadmium	111		1.00	0.021	MS
Chromium	52		2.00	0.305	MS
Cobalt	59		1.00	0.008	MS
Copper	63		1.00	0.119	MS
Lead	208		1.00	0.271	MS
Nickel	60		1.00	0.058	MS
Selenium	82		2.00	0.177	MS
Silver	107		1.00	0.062	MS
Thallium	203		1.00	0.024	MS
Vanadium	51		2.00	0.432	MS
Molybdenum	98		1.00	0.098	MS

Comments: _____

METALS

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DETECTION LIMITS

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: _____ Date: 2/26/2015

Flame AA ID Number: PE FAA/CVAA

Furnace AA ID Number:

CK 5/14/15

Analyte	Wave-length (nm)	Back-ground	PQL ~~mg/Kg~~ ug/L	MDL ~~mg/Kg~~ ug/L	M
Mercury	253.70	BD	0.200	0.040	CV

Comments:

METALS

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ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: Optima ICP 3 Date: 4/13/2015

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg
Aluminum	237.313	0.0000000	0.3819050	-7.5242701	0.0777340
Antimony	206.836	0.1368390	0.0000000	0.0000000	0.0000000
Arsenic	188.979	0.1017790	0.0110612	0.0361352	0.0427145
Barium	233.527	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.107	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.772	0.1909870	0.1424060	4.0142598	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.1863470	0.0000000
Calcium	227.546	-2.5256400	0.0000000	-26.1947002	0.0667551
Chromium	267.716	0.0000000	0.0000000	-0.0360640	-0.0800381
Cobalt	228.616	0.0000000	0.0000000	0.0355176	0.0000000
Copper	324.752	0.0000000	0.0000000	-0.0963427	0.0000000
Iron	259.939	0.0000000	0.0000000	0.0000000	0.0985314
Lead	220.353	-0.1572870	0.0000000	0.0557667	0.0000000
Magnesium	279.077	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	-0.1250760	0.0000000
Molybdenum	202.031	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0545648	0.0234538	0.3398180	0.0617573
Silver	328.068	0.0000000	0.0000000	-0.3191150	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.801	0.1246000	0.0392183	0.0000000	-0.0106307
Tin	189.927	0.0000000	-0.1151970	0.0000000	0.0000000
Titanium	337.279	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0520699	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

METALS
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ICP LINEAR RANGES (QUARTERLY)

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: Optima ICP 3 Date: 2/12/2015

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Iron	0.200	50000	P
Potassium	0.200	150000	P
Manganese	0.200	10000	P

Comments: _____

METALS
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ICP LINEAR RANGES (QUARTERLY)

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: PE ICPMS Date: 1/15/2015

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Antimony	0.100	200	MS
Arsenic	0.100	200	MS
Barium	0.100	200	MS
Beryllium	0.100	200	MS
Cadmium	0.100	200	MS
Chromium	0.100	200	MS
Cobalt	0.100	200	MS
Copper	0.100	200	MS
Lead	0.100	200	MS
Nickel	0.100	200	MS
Selenium	0.100	200	MS
Silver	0.100	100	MS
Thallium	0.100	200	MS
Vanadium	0.100	200	MS
Molybdenum	0.100	200	MS

Comments: _____

METALS
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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: Optima ICP 3 Method: P

Start Date: 4/29/2015 End Date: 4/29/2015

Sample ID.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
Calib Blank 1	1.00	13:06												X			X			X										
Calib Std 1	1.00	13:12															X													
Calib Std 2	1.00	13:18																		X										
Calib Std 3	1.00	13:24												X						X										
Calib Std 4	1.00	13:28												X			X			X										
Calib Std 5	1.00	13:33												X			X			X										
ICV1	1.00	13:38												X			X			X										
ICB1	1.00	13:43												X			X			X										
ZZZZZZ	1.00	13:50																												
ZZZZZZ	1.00	13:56																												
ZZZZZZ	1.00	14:01																												
ZZZZZZ	1.00	14:06																												
ZZZZZZ	1.00	14:11																												
ZZZZZZ	1.00	14:17																												
ZZZZZZ	1.00	14:23																												
ZZZZZZ	1.00	14:30																												
ZZZZZZ	1.00	14:36																												
ZZZZZZ	1.00	14:42																												
ZZZZZZ	1.00	14:48																												
ZZZZZZ	1.00	14:55																												
ZZZZZZ	1.00	15:01																												
ZZZZZZ	1.00	15:07																												
ZZZZZZ	1.00	15:14																												
ZZZZZZ	1.00	15:20																												
ZZZZZZ	1.00	15:25																												
ZZZZZZ	1.00	15:31																												
ZZZZZZ	1.00	15:38																												
ZZZZZZ	5.00	15:44																												
CCV1	1.00	15:50												X			X			X										
CCB1	1.00	15:55												X			X			X										
CRDL1	1.00	16:02												X			X			X										
ICS-A1	1.00	16:08												X			X			X										
ICS-AB1	1.00	16:13												X			X			X										

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: Optima ICP 3 Method: P

Start Date: 4/29/2015 End Date: 4/29/2015

Sample ID.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	16:18																										
ZZZZZZ	1.00	16:24																										
CCV2	1.00	16:29												X			X			X								
CCB2	1.00	16:34												X			X			X								
PBW	1.00	16:40												X			X			X								
LCSW	1.00	16:46												X			X			X								
MRC-MW-62C-041315	1.00	16:53												X			X			X								
ZZZZZZ	1.00	16:59																										
MRC-MW-34B-041315	1.00	17:04												X			X			X								
MRC-MW-62A-041315	1.00	17:11												X			X			X								
MRC-MW-62A-041315L	5.00	17:17												X			X			X								
ZZZZZZ	1.00	17:23																										
ZZZZZZ	1.00	17:30																										
ZZZZZZ	1.00	17:37																										
CCV3	1.00	17:43												X			X			X								
CCB3	1.00	17:48												X			X			X								
ZZZZZZ	1.00	17:54																										
ZZZZZZ	1.00	18:01																										
ZZZZZZ	5.00	18:07																										
ZZZZZZ	1.00	18:14																										
ZZZZZZ	1.00	18:20																										
ZZZZZZ	1.00	18:26																										
ZZZZZZ	1.00	18:33																										
ZZZZZZ	1.00	18:39																										
ZZZZZZ	1.00	18:44																										
ZZZZZZ	1.00	18:51																										
CCV4	1.00	18:56												X			X			X								
CCB4	1.00	19:01												X			X			X								
ZZZZZZ	1.00	19:07																										
ZZZZZZ	1.00	19:12																										
ZZZZZZ	1.00	19:18																										
ZZZZZZ	10.00	19:24																										
CCV5	1.00	19:31												X			X			X								

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

METALS
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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: Optima ICP 3 Method: P

Start Date: 4/29/2015 End Date: 4/29/2015

Sample ID	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB5	1.00	19:36												X			X			X							
CRDL2	1.00	19:42												X			X			X							
ICS-A2	1.00	19:48												X			X			X							
ICS-AB2	1.00	19:53												X			X			X							
CCV6	1.00	19:58												X			X			X							
CCB6	1.00	20:03												X			X			X							

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

METALS
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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: PE ICPMS Method: MS

Start Date: 4/30/2015 End Date: 4/30/2015

Sample ID.	D/F	Time	% R	Analytes																									
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
Blank	1.00	11:10			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
Standard 1	1.00	11:17			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
Standard 2	1.00	11:23			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
Standard 3	1.00	11:30			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ICV1	1.00	11:36			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ICB1	1.00	11:43			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CRDL1	1.00	11:49			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ICS-A1	1.00	11:56			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ICS-AB1	1.00	12:02			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CCV1	1.00	12:09			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CCB1	1.00	12:15			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	12:22																											
PBW	1.00	12:28			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
LCSW	1.00	12:35			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	12:42																											
MRC-MW-62C-041315	1.00	12:48			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
MRC-MW-34B-041315	1.00	12:55			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
MRC-MW-62A-041315	1.00	13:02			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
MRC-MW-62A-041315L	5.00	13:08			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CRDL2	1.00	13:15			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CCV2	1.00	13:21			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CCB2	1.00	13:28			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	13:34																											
ZZZZZZ	1.00	13:41																											
ZZZZZZ	1.00	13:48																											
ZZZZZZ	1.00	13:54																											
ZZZZZZ	1.00	14:01																											
ZZZZZZ	5.00	14:08																											
CRDL3	1.00	14:14			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
ZZZZZZ	1.00	14:21																											
CCV3	1.00	14:27			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*
CCB3	1.00	14:34			X	X	X	X	X		X	X	X		X				X		X	X		X	X			*

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

METALS

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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: PE ICPMS Method: MS

Start Date: 4/30/2015 End Date: 4/30/2015

Sample ID.	D/F	Time	% R	Analytes																								
				B	AU	LI	MO	OS	PD	P	PT	SI	S	SN	SR	TI	U	W	IN	TH								
Blank	1.00	11:10					X																					
Standard 1	1.00	11:17					X																					
Standard 2	1.00	11:23					X																					
Standard 3	1.00	11:30					X																					
ICV1	1.00	11:36					X																					
ICB1	1.00	11:43					X																					
CRDL1	1.00	11:49					X																					
ICS-A1	1.00	11:56					X																					
ICS-AB1	1.00	12:02					X																					
CCV1	1.00	12:09					X																					
CCB1	1.00	12:15					X																					
ZZZZZZ	1.00	12:22																										
PBW	1.00	12:28					X																					
LCSW	1.00	12:35					X																					
ZZZZZZ	1.00	12:42																										
MRC-MW-62C-041315	1.00	12:48					X																					
MRC-MW-34B-041315	1.00	12:55					X																					
MRC-MW-62A-041315	1.00	13:02					X																					
MRC-MW-62A-041315L	5.00	13:08					X																					
CRDL2	1.00	13:15					X																					
CCV2	1.00	13:21					X																					
CCB2	1.00	13:28					X																					
ZZZZZZ	1.00	13:34																										
ZZZZZZ	1.00	13:41																										
ZZZZZZ	1.00	13:48																										
ZZZZZZ	1.00	13:54																										
ZZZZZZ	1.00	14:01																										
ZZZZZZ	5.00	14:08																										
CRDL3	1.00	14:14					X																					
ZZZZZZ	1.00	14:21																										
CCV3	1.00	14:27					X																					
CCB3	1.00	14:34					X																					

METALS
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ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: PE FAA/CVAA Method: CV

Start Date: 4/21/2015 End Date: 4/21/2015

Sample ID.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calib Blank	1.00	07:48																X									
0.2ppb std	1.00	07:50																X									
0.5ppb std	1.00	07:52																X									
1.0ppb std	1.00	07:53																X									
2.0ppb std	1.00	07:55																X									
5.0ppb std	1.00	07:56																X									
10.0ppb std	1.00	07:58																X									
ICV1	1.00	08:00																X									
ICB1	1.00	08:01																X									
CRDL1	1.00	08:03																X									
CCV1	1.00	08:05																X									
CCB1	1.00	08:06																X									
PBW	1.00	08:08																X									
LCSW	1.00	08:10																X									
ZZZZZZ	1.00	08:11																									
ZZZZZZ	1.00	08:13																									
ZZZZZZ	1.00	08:14																									
ZZZZZZ	1.00	08:16																									
ZZZZZZ	1.00	08:18																									
ZZZZZZ	1.00	08:19																									
ZZZZZZ	1.00	08:21																									
ZZZZZZ	1.00	08:23																									
CCV2	1.00	08:24																X									
CCB2	1.00	08:26																X									
ZZZZZZ	1.00	08:28																									
ZZZZZZ	1.00	08:29																									
MRC-MW-62C-041315	1.00	08:31																X									
MRC-MW-34B-041315	1.00	08:33																X									
MRC-MW-62A-041315	1.00	08:34																X									
ZZZZZZ	1.00	08:36																									
ZZZZZZ	1.00	08:38																									
ZZZZZZ	1.00	08:39																									
ZZZZZZ	1.00	08:41																									

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

METALS
-14-

ANALYSIS RUN LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

Instrument ID Number: PE FAA/CVAA Method: CV

Start Date: 4/21/2015 End Date: 4/21/2015

Sample ID.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	08:43																										
CCV3	1.00	08:44																X										
CCB3	1.00	08:46																X										
ZZZZZZ	1.00	08:47																										
ZZZZZZ	1.00	08:49																										
ZZZZZZ	1.00	08:51																										
ZZZZZZ	1.00	08:52																										
ZZZZZZ	1.00	08:54																										
CRDL2	1.00	08:56																X										
CCV4	1.00	08:57																X										
CCB4	1.00	08:59																X										

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

METALS

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS Environmental Contract: R1502645

Lab Code: _____ Case No.: _____ NRAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP-MS Instrument ID: PE ICPMS Start Date: 4/30/2015 End Date: 4/30/2015

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element In	Q	Element Ho	Q	Element Ge	Q	Element Sc	Q	Element Tb	Q	Element	Q
Blank	Blank	11:10	100		100		100		100		100			
Standard 1	Standard 1	11:17	103		103		102		105		103			
Standard 2	Standard 2	11:23	101		101		100		104		101			
Standard 3	Standard 3	11:30	105		105		103		106		105			
ICV1	ICV1	11:36	105		106		105		107		106			
ICB1	ICB1	11:43	98		99		95		99		98			
CRDL1	CRDL1	11:49	103		103		100		103		103			
ICS-A1	ICS-A1	11:56	105		105		99		100		105			
ICS-AB1	ICS-AB1	12:02	106		110		100		98		110			
CCV1	CCV1	12:09	112		117		102		102		115			
CCB1	CCB1	12:15	103		107		97		96		106			
PBW-234667	PBW	12:28	98		101		92		91		101			
LCSW-234667	LCSW	12:35	103		109		97		94		108			
R1502645-00	MRC-MW-62C-04131	12:48	103		108		99		104		107			
R1502645-00	MRC-MW-34B-04131	12:55	94		110		88		94		109			
R1502645-00	MRC-MW-62A-04131	13:02	87		93		80		85		92			
R1502645-00	MRC-MW-62A-04131	13:08	80		84		73		73		82			
CRDL2	CRDL2	13:15	97		102		92		92		102			
CCV2	CCV2	13:21	99		102		94		95		102			
CCB2	CCB2	13:28	80		83		77		76		83			
CRDL3	CRDL3	14:14	97		101		92		95		100			
CCV3	CCV3	14:27	102		106		98		101		106			
CCB3	CCB3	14:34	93		96		90		93		96			

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Initial Calibration Source: ACCUSTANDARD

Continuing Calibration Source: ACCUSTANDARD

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	50	50	100	50	49	98	50	100	MS
Arsenic	50	52	104	50	52	104	52	104	MS
Barium	50	50	100	50	49	98	49	98	MS
Beryllium	50	49	98	50	49	98	48	96	MS
Cadmium	50	51	102	50	51	102	51	102	MS
Chromium	50	51	102	50	52	104	51	102	MS
Cobalt	50	52	104	50	51	102	50	100	MS
Copper	50	51	102	50	51	102	50	100	MS
Iron	5000	5080	102	5000	5080	102	5170	103	P
Lead	50	52	104	50	53	106	52	104	MS
Potassium	25000	24200	97	25000	24200	97	24200	97	P
Manganese	750	762	102	750	762	102	774	103	P
Mercury	3.00	3.11	104	3.00	3.15	105	3.04	101	CV
Nickel	50	52	104	50	52	104	51	102	MS
Selenium	50	51	102	50	52	104	51	102	MS
Silver	50	50	100	50	48	96	49	98	MS
Thallium	50	52	104	50	53	106	52	104	MS
Vanadium	50	53	106	50	53	106	52	104	MS
Molybdenum	50	52	104	50	50	100	50	100	MS

Comments:

METALS
-2A-
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Initial Calibration Source: ACCUSTANDARD

Continuing Calibration Source: ACCUSTANDARD

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Antimony				50	50	100			MS
Arsenic				50	51	102			MS
Barium				50	49	98			MS
Beryllium				50	50	100			MS
Cadmium				50	50	100			MS
Chromium				50	50	100			MS
Cobalt				50	50	100			MS
Copper				50	49	98			MS
Iron				5000	5180	104	5230	105	P
Lead				50	52	104			MS
Potassium				25000	24300	97	24700	99	P
Manganese				750	776	103	781	104	P
Mercury				3.00	3.16	105	3.18	106	CV
Nickel				50	51	102			MS
Selenium				50	50	100			MS
Silver				50	48	96			MS
Thallium				50	52	104			MS
Vanadium				50	52	104			MS
Molybdenum				50	50	100			MS

Comments:

METALS
-2A-
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Initial Calibration Source: ACCUSTANDARD

Continuing Calibration Source: ACCUSTANDARD

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Iron				5000	5150	103	5230	105	P
Potassium				25000	24200	97	24300	97	P
Manganese				750	776	103	780	104	P

Comments:

METALS
-2B-
CRDL STANDARD FOR AA AND ICP

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

AA CRDL Standard Source: ACCUSTANDARD

ICP CRDL Standard Source: INORGANIC VENTURES

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Antimony				1.0	1.11	111	1.06	106
Arsenic				1.0	1.01	101	1.04	104
Barium				1.0	0.94	94	0.94	94
Beryllium				1.0	0.95	95	0.94	94
Cadmium				1.0	0.97	97	0.97	97
Chromium				2.0	2.07	104	2.11	106
Cobalt				1.0	1.02	102	0.99	99
Copper				1.0	1.00	100	1.00	100
Iron				100.0	102.96	103	104.53	105
Lead				1.0	0.97	97	0.98	98
Potassium				1000.0	975.95	98	953.45	95
Manganese				15.0	15.70	105	15.80	105
Mercury	0.200	0.189	94					
Nickel				1.0	0.97	97	0.97	97
Selenium				2.0	2.02	101	1.96	98
Silver				1.0	0.99	99	0.99	99
Thallium				1.0	0.96	96	0.95	95
Vanadium				2.0	2.05	102	2.16	108
Molybdenum				1.0	1.06	106	1.02	102

Comments:

METALS
-2B-
CRDL STANDARD FOR AA AND ICP

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: MRC-MW-32A-0

AA CRDL Standard Source: ACCUSTANDARD

ICP CRDL Standard Source: INORGANIC VENTURES

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Antimony				1.0			1.07	107
Arsenic				1.0			1.02	102
Barium				1.0			0.96	96
Beryllium				1.0			1.00	100
Cadmium				1.0			0.97	97
Chromium				2.0			2.05	102
Cobalt				1.0			1.00	100
Copper				1.0			0.99	99
Lead				1.0			1.00	100
Mercury	0.200	0.193	96					
Nickel				1.0			0.94	94
Selenium				2.0			2.05	102
Silver				1.0			0.98	98
Thallium				1.0			0.95	95
Vanadium				2.0			2.15	108
Molybdenum				1.0			1.03	103

Comments:

METALS

-3-

BLANKS

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	C	Continuing Calibration Blank ug/L 1	C	2	C	3	C	Preparation Blank	C	M
Antimony	0.493	J	0.448	J	0.475	J	0.557	J	0.436	J	MS
Arsenic	0.359	U	0.359	U	0.359	U	0.359	U	0.359	U	MS
Barium	0.034	U	0.034	U	0.034	U	0.034	U	0.034	U	MS
Beryllium	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	MS
Cadmium	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	MS
Chromium	0.305	U	0.305	U	0.305	U	0.305	U	0.744	J	MS
Cobalt	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	MS
Copper	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	MS
Iron	8.65	U	8.65	U	9.42	J	8.65	U	8.650	U	P
Lead	0.271	U	0.271	U	0.271	U	0.271	U	0.271	U	MS
Potassium	45.01	J	44.40	U	72.02	J	44.40	U	44.400	U	P
Manganese	0.61	J	0.50	U	0.89	J	0.92	J	0.499	U	P
Mercury	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	CV
Nickel	0.058	U	0.058	U	0.058	U	0.058	U	0.058	U	MS
Selenium	0.177	U	0.177	U	0.177	U	0.177	U	0.177	U	MS
Silver	0.062	U	0.062	U	0.062	U	0.062	U	0.071	J	MS
Thallium	0.033	J	0.035	J	0.038	J	0.038	J	0.051	J	MS
Vanadium	0.432	U	0.432	U	0.432	U	0.432	U	0.432	U	MS
Molybdenum	0.166	J	0.255	J	0.137	J	0.200	J	0.281	J	MS

Maximum concentration

Comments:

METALS

-3-

BLANKS

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	C	Continuing Calibration Blank ug/L 1	C	2	C	3	C	Preparation Blank	C	M
Iron			10.66	J	8.65	U	18.05	J			P
Potassium			44.40	U	44.40	U	44.40	U			P
Manganese			0.87	J	0.73	J	0.50	U			P
Mercury			0.040	U							CV

Maximum concentration

Comments:

METALS

-4-

ICP INTERFERENCE CHECK SAMPLE

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: Optima ICP 3 ICS Source: INORGANIC VENTURES

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Iron	100000	100000	91300.0	90300	90	91900.0	91300	91
Potassium			32.3	22		36.6	45	
Manganese		500	-3.5	527	105	-3.3	526	105

METALS

-4-

ICP INTERFERENCE CHECK SAMPLE

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

ICP ID Number: PE ICPMS ICS Source: INORGANIC VENTURES

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.00	20.00	0.15	21.28	106			
Arsenic	0.00	20.00	0.07	20.30	102			
Barium	0.00	20.00	0.49	20.72	104			
Beryllium	0.00	20.00	0.01	18.19	91			
Cadmium	0.00	20.00	0.07	19.56	98			
Chromium	0.00	20.00	0.71	21.84	109			
Cobalt	0.00	20.00	0.10	20.58	103			
Copper	0.00	20.00	0.46	19.71	99			
Lead	0.00	20.00	0.30	21.53	108			
Nickel	0.00	20.00	0.51	19.80	99			
Selenium	0.00	20.00	0.02	19.64	98			
Silver	0.00	20.00	0.04	19.46	97			
Thallium	0.00	20.00	0.04	21.08	105			
Vanadium	0.00	20.00	0.14	22.28	111			
Molybdenum	400.00	400.00	389.66	397.06	99			

METALS

-13-

PREPARATION LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-041315

Method: P

Sample ID	Preparation Date	Initial Volume	Final Volume (mL)
LCSW	4/29/2015	50.0	50.0
PBW	4/29/2015	50.0	50.0
MRC-MW-62C-041315	4/29/2015	50.0	50.0
MRC-MW-34B-041315	4/29/2015	50.0	50.0
MRC-MW-62A-041315	4/29/2015	50.0	50.0

Comments:

METALS

-13-

PREPARATION LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-041315

Method: MS

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
LCSW	4/29/2015	50.0	50.0
PBW	4/29/2015	50.0	50.0
MRC-MW-62C-041315	4/29/2015	50.0	50.0
MRC-MW-34B-041315	4/29/2015	50.0	50.0
MRC-MW-62A-041315	4/29/2015	50.0	50.0

Comments:

METALS

-13-

PREPARATION LOG

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-041315

Method: CV

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
LCSW	4/28/2015	25.0	25.0
PBW	4/28/2015	25.0	25.0
MRC-MW-62C-041315	4/28/2015	25.0	25.0
MRC-MW-34B-041315	4/28/2015	25.0	25.0
MRC-MW-62A-041315	4/28/2015	25.0	25.0

Comments:

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Solid LCS Source: _____

Aqueous LCS Source: ACCUSTANDARD

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits	%R
Antimony	20	21.10	106					
Arsenic	20	19.80	99					
Barium	20	19.10	96					
Beryllium	20	19.10	96					
Cadmium	20	20.00	100					
Chromium	20	20.90	104					
Cobalt	20	19.80	99					
Copper	20	20.00	100					
Iron	1000	1030	103					
Lead	20	20.60	103					
Potassium	20000	18700	94					
Manganese	500	507	101					
Mercury	1.000	1.000	100					
Nickel	20	19.80	99					
Selenium	20	20.00	100					
Silver	20	19.10	96					
Thallium	20	20.10	100					
Vanadium	20	20.80	104					
Molybdenum	20	19.90	100					

CW 5/12/15

Comments: _____

METALS

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ICP SERIAL DILUTIONS

SAMPLE NO.

MRC-MW-62A-041315L

Contract: R1502645

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: MRC-MW-32A-0

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Antimony	0.34	J	1.52	U	100.0		MS
Arsenic	1.20		1.80	U	100.0		MS
Barium	67.48		67.97		1		MS
Beryllium	2.21		2.52	J	14		MS
Cadmium	0.02	U	0.11	U			MS
Chromium	0.48	J	1.84	J	283		MS
Cobalt	17.40		17.51		1		MS
Copper	0.78	J	0.78	J	0		MS
Iron	2760.00		2800.00		1		P
Potassium	5450.00		5860.00	J	8		P
Lead	0.27	U	1.36	U			MS
Manganese	700.00		716.00		2		P
Nickel	52.59		54.41		3		MS
Selenium	0.23	J	0.89	U	100.0		MS
Silver	0.06	U	0.31	U			MS
Thallium	0.02	U	0.12	U			MS
Vanadium	0.43	U	2.16	U			MS
Molybdenum	0.48	J	0.58	J	21		MS

Comments: _____

Preparation Information Benchsheet

Prep Run#: 234587
Team: Metals/CWINKSTERN

Prep WorkFlow: MetDigAqICP
Prep Method: EPA 3005A/3010A

Status: Prepped
Prep Date/Time: 4/28/15 01:36 PM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1504262-01	MB		50mL	6010C/Ag T, Al T, As T, B T, Ba T, Be T, Ca T, Cd T, Co T, Cr T, Cu T, Fe T, K T, Mg T, Mn T, Na T, Ni T, Pb T, Sb T, Se T, Si T, Sn T, Tl T, V T, Zn T	<2			50.00mL	Colorless-Clear		HB #6 well = I5 temp = 94C correction factor = 0.0C corrected temp =94C
2	RQ1504262-02	LCS		50mL	6010C/Ag T, Al T, As T, B T, Ba T, Be T, Ca T, Cd T, Co T, Cr T, Cu T, Fe T, K T, Mg T, Mn T, Na T, Ni T, Pb T, Sb T, Se T, Sn T, Tl T, V T, Zn T	<2			50.00mL	Colorless-Clear	0.5000 mL/77579; 0.2500 mL/78778; 0.0500 mL/74566; 0.5000 mL/77578	
3	RQ1504262-03	LCS		50mL	6010C/Si T	<2			50.00mL	Colorless-Clear	0.2500 mL/77527	
4	R1502645-004	MRC-MW-62C-041315	.03	50mL	6010C/Al T, Ca T, Fe T, K T, Mg T, Mn T, Na T, Si T	<2			50.00mL	Colorless-Clear		TIER IV
5	R1502645-005	MRC-MW-34B-041315	.21	50mL	6010C/Ba T, Fe T, K T, Mn T, V T	<2			50.00mL	Colorless-Clear		
6	R1502645-006	MRC-MW-62A-041315	.03	50mL	6010C/Ba T, Fe T, K T, Mn T, V T	<2			50.00mL	Colorless-Clear		
7	R1502843-001	3805-MWS24-042015	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		TIER IV DOD
8	R1502843-002	3805-PZ14-042015	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
9	RQ1504262-04	R1502843-002 DUP	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
10	RQ1504262-05	R1502843-002 MS	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear	0.5000 mL/77579; 0.5000 mL/77578; 0.2500 mL/78778; 0.0500 mL/74566	
11	R1502843-003	3805-PZ12S-042015	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
12	R1502843-004	3805-PZ3-042015	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
13	R1502843-005	DUP-01-042015	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
14	R1502843-007	1795-MW53-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
15	R1502843-008	1795-MW57-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
16	R1502843-011	1795-PZ15-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
17	R1502843-014	1995-MWS10-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
18	R1502843-015	1995-MWS9-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
19	R1502843-016	3805-PZ2S-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
20	R1502843-017	3805-MWS11-042215	.10	50mL	6010C/Fe T, Mn T	<2			50.00mL	Colorless-Clear		
21	R1503047-001	WWTP Sample	.15	50mL	6010C/Ag T, Al T, As T, B T, Ba T, Be T, Ca T, Cd T, Co T, Cr T, Cu T, Fe T, K T, Mg T, Mn T, Na T, Ni T, Pb T, Sb T, Se T, Sn T, Tl T, V T, Zn T	<2			50.00mL	Black-opaque / Yellow-Cloudy		

Preparation Information Benchsheet

Prep Run#: 234587 **Prep WorkFlow:** MetDigAqICP **Status:** Prepped
Team: Metals/CWINKSTERN **Prep Method:** EPA 3005A/3010A **Prep Date/Time:** 4/28/15 01:36 PM

Spiking Solutions

Name:	Selenium 1000 ug/mL Se	Inventory ID	74566	Logbook Ref:	M5280040P	Expires On:	03/03/2016	Lot #:	140844(
Name:	Silicon 1000 ug/mL Si	Inventory ID	77527	Logbook Ref:	M5280042S	Expires On:	06/09/2016	Lot #:	14J302
Name:	Custom LCS STD A Metals	Inventory ID	77578	Logbook Ref:	M5280042Z	Expires On:	12/12/2015	Lot #:	14L103
Name:	Custom LCS STD B Metals	Inventory ID	77579	Logbook Ref:	M5280042AA	Expires On:	12/12/2015	Lot #:	14L108
Name:	Tin 1000 ug/mL Sn	Inventory ID	78778	Logbook Ref:	M5280043P	Expires On:	08/06/2016	Lot #:	1414148

Preparation Materials

1:1 HCl Metals Grade	M5280043N (80258)	Hot Block Cups	50 mL Lot 1408268 (76705)	Nitric Acid Metals Grade HNO3	M5280044A (79876)
Thermometer	293 (12952)				

Preparation Steps

Step: Digestion
Started: 4/28/15 13:36
Finished: 4/29/15 07:57
By: DBOND
Comments

Comments: _____

Reviewed By: DBond Date: 4/29/15 Spike Witness: DBOND Date: _____

Chain of Custody

Relinquished By: DBond Date: 4/29/15

Received By: R-A Date: 4/29/15

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 234667
Team: Metals/CWINKSTERN

Prep WorkFlow: MetDigAqMS
Prep Method: EPA 200.2

Status: Prepped
Prep Date/Time: 4/29/15 09:23 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1504304-01	MB		50mL	200.8/Ag T, As T, Ba T, Be T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Sb T, Se T, Tl T, Zn T	<2			50.00mL	Colorless-Clear		HB #8 well = C1 temp = 93C correction factor = 0.0C. corrected temp = 93C
2	RQ1504304-03	MB		50mL	200.8/Ag T, As T, Ba T, Be T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Se T, Zn T, 6020A/Ag T, As T, Ba T, Be T, Cd T, Co T, Cr T, Cu T, Mo T, Ni T, Pb T, Sb T, Se T, Tl T, V T, Zn T	<2			50.00mL	Colorless-Clear		
3	RQ1504304-02	LCS		50mL	200.8/Ag T, As T, Ba T, Be T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Sb T, Se T, Tl T, Zn T	<2			50.00mL	Colorless-Clear	0.1000 mL/78113; 0.1000 mL/78114	
4	RQ1504304-04	LCS		50mL	200.8/Ag T, As T, Ba T, Be T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Se T, Zn T, 6020A/Ag T, As T, Ba T, Be T, Cd T, Co T, Cr T, Cu T, Mo T, Ni T, Pb T, Sb T, Se T, Tl T, V T, Zn T	<2			50.00mL	Colorless-Clear	0.1000 mL/78113; 0.1000 mL/78114	
5	R1502484-004	PW METALS 8206	.01	50mL	200.8/Ag T, As T, Ba T, Be T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Sb T, Se T, Tl T, Zn T	<2			50.00mL	Colorless-Clear		
6	R1502645-004	MRC-MW-62C-041315	.03	50mL	6020A/Ag T, As T, Ba T, Be T, Cd T, Co T, Cr T, Cu T, Ni T, Pb T, Sb T, Se T, Tl T, V T, Zn T	<2			50.00mL	Colorless-Clear		TIER IV
7	R1502645-005	MRC-MW-34B-041315	.21	50mL	6020A/Ag T, As T, Ba T, Be T, Cd T, Co T, Cr T, Cu T, Mo T, Ni T, Pb T, Sb T, Se T, Tl T, V T	<2			50.00mL	Colorless-Clear		
8	R1502645-006	MRC-MW-62A-041315	.03	50mL	6020A/Ag T, As T, Ba T, Be T, Cd T, Co T, Cr T, Cu T, Mo T, Ni T, Pb T, Sb T, Se T, V T	<2			50.00mL	Colorless-Clear		
9	R1503052-001	M16514-2	.01	50mL	200.8/Pb T	<2			50.00mL	Colorless-Clear		
10	RQ1504304-05	R1503052-001 DUP	.01	50mL	200.8/Pb T	<2			50.00mL	Colorless-Clear		
11	RQ1504304-06	R1503052-001 MS	.01	50mL	200.8/Pb T	<2			50.00mL	Colorless-Clear	0.1000 mL/78114; 0.1000 mL/78113	
12	R1503070-001	BJ06789	.02	50mL	200.8/Be T, Cd T	<2			50.00mL	Colorless-Clear		
13	R1503073-001	WWV1-042815	.03	50mL	200.8/Ag T, As T, Ba T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Se T, Zn T	<2			50.00mL	Colorless-Clear		Tier IV
14	R1503073-002	WWV2-042815	.03	50mL	200.8/Ag T, As T, Ba T, Cd T, Cr T, Cu T, Mn T, Ni T, Pb T, Se T, Zn T	<2			50.00mL	Colorless-Clear		

Spiking Solutions

Name: ICPMS Calibration Standard 1 (10 ug/mL Inventory ID 78113 Logbook Ref: M5280043F Expires On: 05/31/2016 Lot #: 2120651

Name: ICPMS Calibration Standard 2 (10 ug/mL Inventory ID 78114 Logbook Ref: M5280043G Expires On: 07/31/2016 Lot #: 2120850

Preparation Information Benchsheet

Prep Run#: 234667
Team: Metals/CWINKSTERN

Prep WorkFlow: MetDigAqMS
Prep Method: EPA 200.2

Status: Prepped
Prep Date/Time: 4/29/15 09:23 AM

Preparation Materials

1:1 HCl Metals Grade	M5280043N (80258)	1:1 Nitric Acid Metals Grade	M5280044A (80259)	Hot Block Cups	50 mL Lot 1408268 (76705)
Thermometer	129 (80236)				

Preparation Steps

Step: Digestion
Started: 4/29/15 09:23
Finished: 4/29/15 16:15
By: CWINKSTERN
Comments

Comments:

Reviewed By: [signature] DBond Date: 4/29/15 4/30/15

Spike Witness: DBOND Date:

Chain of Custody CJW 4/29/15

Relinquished By: [signature] Date: 4/29/15

Received By: R Aee Date: 1

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 233909
Team: Metals/DBOND

Prep WorkFlow: HgDigAq
Prep Method: Method

Status: Prepped
Prep Date/Time: 4/20/15 09:25 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1503855-01	MB		25mL	245.1/Hg T, 7470A/Hg T	<2			25.00mL			HB#7 Well=E1 Temp=95C corr factor=0C corrected temp=95C/95C
2	RQ1503855-02	LCS		25mL	245.1/Hg T, 7470A/Hg T	<2			25.00mL		0.2500 mL/80449	
3	R1500696-011	200 SR200-5 2015 SA1	.03	25mL	7470A/Hg T	<2			25.00mL			
4	R1502576-001	1504080938B PL-1-486	.02	25mL	7470A/Hg T	<2			25.00mL			Tier III
5	RQ1503855-03	R1502576-001 DUP	.02	25mL	7470A/Hg T	<2			25.00mL			
6	RQ1503855-04	R1502576-001 MS	.02	25mL	7470A/Hg T	<2			25.00mL		0.2500 mL/80449	
7	R1502576-002	1504080939B PL-1-486	.02	25mL	7470A/Hg T	<2			25.00mL			
8	R1502576-006	1504081047Y ST-7-550	.02	25mL	7470A/Hg T	<2			25.00mL			
9	R1502576-007	1504081049Y ST-4-550	.02	25mL	7470A/Hg T	<2			25.00mL			
10	R1502576-012	1504090914 B655-INF-2	.02	25mL	7470A/Hg T	<2			25.00mL			
11	R1502576-013	1504090915 B655-INF-2	.02	25mL	7470A/Hg T	<2			25.00mL			
12	R1502640-001	1504091007Y ST-7-450	.02	25mL	7470A/Hg T	<2			25.00mL			
13	R1502645-004	MRC-MW-62C-041315	.04	25mL	7470A/Hg T	<2			25.00mL			
14	R1502645-005	MRC-MW-34B-041315	.22	25mL	7470A/Hg T	<2			25.00mL			
15	R1502645-006	MRC-MW-62A-041315	.04	25mL	7470A/Hg T	<2			25.00mL			
16	R1502672-001	AWI-INF-002	.04	25mL	7470A/Hg T	<2			25.00mL			
17	R1502672-002	AWI-EFF-002	.04	25mL	7470A/Hg T	<2			25.00mL			
18	R1502672-003	AWI-INF-003	.04	25mL	7470A/Hg T	<2			25.00mL			
19	R1502672-004	AWI-EFF-003	.04	25mL	7470A/Hg T	<2			25.00mL			
20	R1502728-001	E-1	.06	25mL	245.1/Hg T	<2			25.00mL			
21	RQ1503855-05	R1502728-001 DUP	.06	25mL	245.1/Hg T	<2			25.00mL			
22	RQ1503855-06	R1502728-001 MS	.06	25mL	245.1/Hg T	<2			25.00mL		0.2500 mL/80449	
23	R1502731-001	MH2	.12	25mL	245.1/Hg T	<2			25.00mL			
24	R1502770-001	WW Outfall #2 (Ellicott Street)	.14	25mL	245.1/Hg T	<2			25.00mL			
25	R1502803-001	FLOOR WASH WATER-2	.07	25mL	7470A/Hg T	<2			25.00mL			

Spiking Solutions

Name: Mercury LCSW Metals Hg Inventory ID 80449 Logbook Ref: M6810046B Expires On: 04/21/2015

Preparation Materials

Hot Block Cups	50 mL Lot 1408268 (76705)	Sulfuric Acid Reagent Grade H2SO4	M5280038P (71915)	Hydrochloric Acid (HCl) Metals Grade	M5280043N (80125)
Nitric Acid Metals Grade HNO3	M5280044A (79876)	Hydroxylamine Hydrochloride Reagent Grade	M5280042Y (77537)	Sodium Chloride Reagent Grade NaCl	M5280042X (77536)
Potassium Permanganate RG KMnO4	M5280041G (77996)	Potassium Persulfate RG K2S2O8	M5280037BB (70162)	Thermometer	129 (80236)
Stannous Chloride SnCl2	M5280033p (63338)				

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1502645
Project:	MRC-GW 2015 Sampling/112IC06247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R1502645-MB	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	0.3	U	mg/L	2.0	0.3	1	NA	4/21/15 09:06	
Ammonia as Nitrogen, undistilled	ASTM D6919-09	0.0006	U	mg/L	0.0050	0.0006	1	NA	4/16/15 08:23	
Carbon, Total Organic (TOC)	SM 5310B/C-2000(201	0.4	U	mg/L	1.0	0.4	1	NA	4/20/15 16:54	
Chloride	300.0	0.03	U	mg/L	0.20	0.03	1	NA	4/20/15 00:51	
Nitrate as Nitrogen	300.0	0.02	U	mg/L	0.10	0.02	1	NA	4/14/15 12:43	
Nitrite as Nitrogen	300.0	0.03	U	mg/L	0.10	0.03	1	NA	4/14/15 12:43	
Orthophosphate as Phosphorus	365.1	0.002	U	mg/L	0.010	0.002	1	NA	4/14/15 22:17	
Silica, Dissolved as SiO2	USGS I-2700-85	**0.003**	J	mg/L	0.010	0.003	1	NA	4/27/15 16:55	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	**6**	J	mg/L	10	5	1	NA	4/14/15 09:39	
Sulfate	300.0	0.19	U	mg/L	0.20	0.19	1	NA	4/14/15 12:43	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: MRC-GW 2015 Sampling/112IC06247
Sample Matrix: Water

Service Request: R1502645
Date Analyzed: 4/14/15 - 4/27/15

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample R1502645-LCS Result	Spike Amount	% Rec	% Rec Limits
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	17.2	20.0	86	81 - 112
Ammonia as Nitrogen, undistilled	ASTM D6919-09	0.518	0.500	104	90 - 110
Carbon, Total Organic (TOC)	SM 5310B/C-2000(201	9.46	10.0	95	76 - 123
Chloride	300.0	2.04	2.00	102	90 - 110
Nitrate as Nitrogen	300.0	1.02	1.00	101	90 - 110
Nitrite as Nitrogen	300.0	1.06	1.00	106	90 - 110
Orthophosphate as Phosphorus	365.1	0.0252	0.025	101	90 - 110
Silica, Dissolved as SiO2	USGS I-2700-85	0.252	0.250	101	90 - 110
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	896	914	98	90 - 110
Sulfate	300.0	2.09	2.00	105	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Tetra Tech GEO **Service Request:** R1502645

Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Ammonia as Nitrogen, undistilled

Analytical Method: ASTM D6919-09 **Units:** ppm

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	440972	RQ1503809-09	4/16/15 08:11	0.900	0.946	105	90 - 110
CCV2	440972	RQ1503809-10	4/16/15 10:42	0.900	0.936	104	90 - 110
CCV3	440972	RQ1503809-11	4/16/15 13:13	0.900	0.935	104	90 - 110
CCV4	440972	RQ1503809-12	4/16/15 15:43	0.900	0.942	105	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Ammonia as Nitrogen, undistilled

Analytical Method: ASTM D6919-09 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	440972	RQ1503809-05	4/16/15 08:23	0.0006	0.0050	0.0050	U
CCB2	440972	RQ1503809-06	4/16/15 10:54	0.0006	0.0050	0.0050	U
CCB3	440972	RQ1503809-07	4/16/15 13:25	0.0006	0.0050	0.0050	U
CCB4	440972	RQ1503809-08	4/16/15 15:56	0.0006	0.0050	0.0050	U

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic (TOC)

Analytical Method: SM 5310B/C-2000(2011) **Units:** ppm

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	441287	RQ1503922-01	4/20/15 16:33	15.0	13.6	91	85 - 115
CCV2	441287	RQ1503922-02	4/20/15 20:44	15.0	14.2	94	85 - 115
CCV3	441287	RQ1503922-03	4/21/15 00:55	15.0	13.9	92	85 - 115

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analytical Method: SM 5310B/C-2000(2011) **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	441287	RQ1503922-04	4/20/15 16:54	0.4	1.0	1.0	U
CCB2	441287	RQ1503922-05	4/20/15 21:05	0.4	1.0	1.0	U
CCB3	441287	RQ1503922-06	4/21/15 01:16	0.4	1.0	1.0	U

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Chloride

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	441123	RQ1503861-05	4/20/15 00:40	3.25	3.37	104	90 - 110
CCV2	441123	RQ1503861-06	4/20/15 02:53	3.25	3.36	103	90 - 110
CCV3	441123	RQ1503861-07	4/20/15 05:06	3.25	3.37	104	90 - 110
CCV4	441123	RQ1503861-08	4/20/15 07:19	3.25	3.38	104	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645

Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Chloride

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	441123	RQ1503861-09	4/20/15 00:51	0.03	0.20	0.20	U
CCB2	441123	RQ1503861-10	4/20/15 03:04	0.03	0.20	0.20	U
CCB3	441123	RQ1503861-11	4/20/15 05:17	0.03	0.20	0.20	U
CCB4	441123	RQ1503861-12	4/20/15 07:30	0.03	0.20	0.20	U

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Nitrate as Nitrogen

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	440543	RQ1503676-02	4/14/15 12:32	1.80	1.81	100	90 - 110
CCV2	440543	RQ1503676-03	4/14/15 16:13	1.80	1.82	101	90 - 110
CCV3	440543	RQ1503676-04	4/14/15 18:26	1.80	1.82	101	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Nitrate as Nitrogen

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	440543	RQ1503676-05	4/14/15 12:43	0.02	0.10	0.10	U
CCB2	440543	RQ1503676-06	4/14/15 16:24	0.02	0.10	0.10	U
CCB3	440543	RQ1503676-07	4/14/15 18:37	0.02	0.10	0.10	U

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/1121C06247

Continuing Calibration Verification (CCV) Summary
Nitrite as Nitrogen

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	440543	RQ1503676-02	4/14/15 12:32	1.80	1.87	104	90 - 110
CCV2	440543	RQ1503676-03	4/14/15 16:13	1.80	1.88	105	90 - 110
CCV3	440543	RQ1503676-04	4/14/15 18:26	1.80	1.89	105	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Nitrite as Nitrogen

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	440543	RQ1503676-05	4/14/15 12:43	0.03	0.10	0.10	U
CCB2	440543	RQ1503676-06	4/14/15 16:24	0.03	0.10	0.10	U
CCB3	440543	RQ1503676-07	4/14/15 18:37	0.03	0.10	0.10	U

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Orthophosphate as Phosphorus

Analytical Method: 365.1 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	440537	RQ1503752-01	4/14/15 22:16	0.0450	0.0435	97	90 - 110
CCV2	440537	RQ1503752-07	4/14/15 22:28	0.0450	0.0475	105	90 - 110
CCV3	440537	RQ1503752-09	4/14/15 22:31	0.0450	0.0474	105	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Orthophosphate as Phosphorus

Analytical Method: 365.1 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	440537	RQ1503752-02	4/14/15 22:17	0.002	0.010	0.010	U
CCB2	440537	RQ1503752-08	4/14/15 22:29	0.002	0.010	0.010	U
CCB3	440537	RQ1503752-10	4/14/15 22:32	0.002	0.010	0.010	U

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Silica, Dissolved as SiO2

Analytical Method: USGS I-2700-85 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	442184	RQ1504197-01	4/27/15 16:53	0.400	0.402	101	90 - 110
CCV2	442184	RQ1504197-05	4/27/15 17:02	0.400	0.400	100	90 - 110

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Silica, Dissolved as SiO2

Analytical Method: USGS I-2700-85 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	442184	RQ1504197-02	4/27/15 16:55	0.003	0.010	**0.003**	J
CCB2	442184	RQ1504197-04	4/27/15 17:03	0.003	0.010	**0.003**	J

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Verification (CCV) Summary
Sulfate

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	440543	RQ1503676-02	4/14/15 12:32	3.20	3.28	102	90 - 110
CCV2	440543	RQ1503676-03	4/14/15 16:13	3.20	3.26	102	90 - 110
CCV3	440543	RQ1503676-04	4/14/15 18:26	3.20	3.26	102	90 - 110

Client: Tetra Tech GEO **Service Request:** R1502645
Project: MRC-GW 2015 Sampling/112IC06247

Continuing Calibration Blank (CCB) Summary
Sulfate

Analytical Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	440543	RQ1503676-05	4/14/15 12:43	0.19	0.20	0.20	U
CCB2	440543	RQ1503676-06	4/14/15 16:24	0.19	0.20	0.20	U
CCB3	440543	RQ1503676-07	4/14/15 18:37	0.19	0.20	0.20	U

Analytical Results Summary

Instrument Name: R-Buret-01 **Analyst:** KMENGS **Analysis Lot:** 441399 **Method/Testcode:** SM 2320 B-1997(2011)/Alkalinity

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503958-01	Alkalinity, Total as CaCO3	MB		Water	0.00 mg/L	100 mL	2.0 mg/L U	1	0.3	2.0			4/21/15 09:06	N	II
RQ1503958-02	Alkalinity, Total as CaCO3	LCS		Water	17.20 mg/L	100 mL	17.2 mg/L	1	0.3	2.0	86		4/21/15 09:06	N	II
R1502498-047	Alkalinity, Total as CaCO3	N/A		Water	117.50 mg/L	20 mL	118 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
RQ1503958-03	Alkalinity, Total as CaCO3	DUP	R1502498-047	Water	117.50 mg/L	20 mL	118 mg/L	1	0.3	2.0		<1	4/21/15 09:06	N	II
RQ1503958-04	Alkalinity, Total as CaCO3	MS	R1502498-047	Water	165.00 mg/L	20 mL	165 mg/L	1	0.3	2.0	95		4/21/15 09:06	N	II
R1502498-048	Alkalinity, Total as CaCO3	N/A		Water	105.00 mg/L	20 mL	105 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
R1502498-049	Alkalinity, Total as CaCO3	N/A		Water	115.00 mg/L	20 mL	115 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
R1502498-050	Alkalinity, Total as CaCO3	N/A		Water	115.00 mg/L	20 mL	115 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
R1502498-051	Alkalinity, Total as CaCO3	N/A		Water	107.50 mg/L	20 mL	108 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
R1502498-052	Alkalinity, Total as CaCO3	N/A		Water	114.00 mg/L	20 mL	114 mg/L	1	0.3	2.0			4/21/15 09:06	N	II
R1502645-005	Alkalinity, Total as CaCO3	N/A		Water	-1.50 mg/L	100 mL	2.0 mg/L U	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-001	Alkalinity, Total as CaCO3	N/A		Water	8.50 mg/L	100 mL	8.5 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-003	Alkalinity, Total as CaCO3	N/A		Water	9.40 mg/L	100 mL	9.4 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-005	Alkalinity, Total as CaCO3	N/A		Water	11.00 mg/L	100 mL	11.0 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-007	Alkalinity, Total as CaCO3	N/A		Water	4.80 mg/L	100 mL	4.8 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-009	Alkalinity, Total as CaCO3	N/A		Water	3.00 mg/L	100 mL	3.0 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-011	Alkalinity, Total as CaCO3	N/A		Water	8.00 mg/L	100 mL	8.0 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-013	Alkalinity, Total as CaCO3	N/A		Water	4.40 mg/L	100 mL	4.4 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-015	Alkalinity, Total as CaCO3	N/A		Water	1.00 mg/L	100 mL	2.0 mg/L U	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-017	Alkalinity, Total as CaCO3	N/A		Water	5.40 mg/L	100 mL	5.4 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-019	Alkalinity, Total as CaCO3	N/A		Water	4.50 mg/L	100 mL	4.5 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-021	Alkalinity, Total as CaCO3	N/A		Water	9.50 mg/L	100 mL	9.5 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-023	Alkalinity, Total as CaCO3	N/A		Water	2.90 mg/L	100 mL	2.9 mg/L	1	0.3	2.0			4/21/15 09:06	N	IV
R1502671-025	Alkalinity, Total as CaCO3	N/A		Water	5.40 mg/L	100 mL	5.4 mg/L	1	0.3	2.0			4/21/15 09:06	Y	IV
RQ1503958-05	Alkalinity, Total as CaCO3	DUP	R1502671-025	Water	6.00 mg/L	100 mL	6.0 mg/L	1	0.3	2.0		11	4/21/15 09:06	N	IV
RQ1503958-06	Alkalinity, Total as CaCO3	MS	R1502671-025	Water	14.80 mg/L	100 mL	14.8 mg/L	1	0.3	2.0	94		4/21/15 09:06	N	IV

R1502645
R1502671
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Reviewed & Approved
By: CK
Date: 4/22/15

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: R-TOC-01 **Analyst:** BKALKMAN **Analysis Lot:** 441287 **Method/Testcode:** SM 5310B/C-2000(2011)/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503922-01	Carbon, Total Organic (TOC)	CCV		Water	13.64 ppm	42 mL	13.6 ppm	1					4/20/15 16:33	N	II
RQ1503922-04	Carbon, Total Organic (TOC)	CCB		Water	0.12 ppm	42 mL	1.0 mg/L U	1	0.4	1.0			4/20/15 16:54	N	II
RQ1503922-08	Carbon, Total Organic (TOC)	MB		Water	0.12 ppm	42 mL	1.0 mg/L U	1	0.4	1.0			4/20/15 16:54	N	II
RQ1503922-07	Carbon, Total Organic (TOC)	LCS		Water	9.46 ppm	42 mL	9.46 mg/L	1	0.4	1.0	95		4/20/15 17:15	N	II
R1502717-001	Carbon, Total Organic (TOC)	N/A		Water	9.75 ppm	42 mL	195 mg/L	20	7	20			4/20/15 17:36	N	II
R1502772-001	Carbon, Total Organic (TOC)	N/A		Water	12.61 ppm	42 mL	50.4 mg/L	4	1.3	4.0			4/20/15 17:57	N	II
R1502617-001	Carbon, Total Organic (TOC)	N/A		Water	23.17 ppm	42 mL	23.2 mg/L	1	0.4	1.0			4/20/15 18:18	N	IV
R1502617-002	Carbon, Total Organic (TOC)	N/A		Water	7.58 ppm	42 mL	7.6 mg/L	1	0.4	1.0			4/20/15 18:39	Y	IV
RQ1503922-09	Carbon, Total Organic (TOC)	DUP	R1502617-002	Water	7.43 ppm	42 mL	7.4 mg/L	1	0.4	1.0		2	4/20/15 18:59	N	IV
RQ1503922-10	Carbon, Total Organic (TOC)	MS	R1502617-002	Water	15.86 ppm	42 mL	15.9 mg/L	1	0.4	1.0	83		4/20/15 19:20	N	IV
R1502617-003	Carbon, Total Organic (TOC)	N/A		Water	0.36 ppm	42 mL	1.0 mg/L U	1	0.4	1.0			4/20/15 19:41	N	IV
R1502617-004	Carbon, Total Organic (TOC)	N/A		Water	9.91 ppm	42 mL	9.9 mg/L	1	0.4	1.0			4/20/15 20:02	N	IV
R1502617-005	Carbon, Total Organic (TOC)	N/A		Water	13.62 ppm	42 mL	27.2 mg/L	2	0.7	2.0			4/20/15 20:23	N	IV
RQ1503922-02	Carbon, Total Organic (TOC)	CCV		Water	14.17 ppm	42 mL	14.2 ppm	1					4/20/15 20:44	N	II
RQ1503922-05	Carbon, Total Organic (TOC)	CCB		Water	0.12 ppm	42 mL	1.0 mg/L U	1	0.4	1.0			4/20/15 21:05	N	II
R1502617-006	Carbon, Total Organic (TOC)	N/A		Water	21.89 ppm	42 mL	21.9 mg/L	1	0.4	1.0			4/20/15 21:26	N	IV
R1502645-005	Carbon, Total Organic (TOC)	N/A		Water	1.49 ppm	42 mL	1.5 mg/L	1	0.4	1.0			4/20/15 21:47	N	IV
R1502492-004	Carbon, Total Organic (TOC)	N/A		Water	1.35 ppm	42 mL	1.3 mg/L	1	0.4	1.0			4/20/15 22:08	N	II
RQ1503922-11	Carbon, Total Organic (TOC)	DUP	R1502492-004	Water	1.48 ppm	42 mL	1.5 mg/L	1	0.4	1.0		9	4/20/15 22:29	N	II
RQ1503922-12	Carbon, Total Organic (TOC)	MS	R1502492-004	Water	9.85 ppm	42 mL	9.8 mg/L	1	0.4	1.0	85		4/20/15 22:49	N	II
R1502492-005	Carbon, Total Organic (TOC)	N/A		Water	2.54 ppm	42 mL	2.5 mg/L	1	0.4	1.0			4/20/15 23:10	N	II
R1502492-006	Carbon, Total Organic (TOC)	N/A		Water	16.08 ppm	42 mL	32.2 mg/L	2	0.7	2.0			4/20/15 23:31	N	II
R1502592-001	Carbon, Total Organic (TOC)	N/A		Water	2.82 ppm	42 mL	2.8 mg/L	1	0.4	1.0			4/20/15 23:52	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

R1502617
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R1502592

Reviewed & Approved
By:
Date: 4/21/15

Analytical Results Summary

Instrument Name: R-TOC-01 **Analyst:** BKALKMAN **Analysis Lot:** 441287 **Method/Testcode:** SM 5310B/C-2000(2011)/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
R1502592-003	Carbon, Total Organic (TOC)	N/A		Water	3.65 ppm	42 mL	3.7 mg/L	1	0.4	1.0			4/21/15 00:13	N	IV
R1502592-005	Carbon, Total Organic (TOC)	N/A		Water	3.15 ppm	42 mL	3.2 mg/L	1	0.4	1.0			4/21/15 00:34	N	IV
RQ1503922-03	Carbon, Total Organic (TOC)	CCV		Water	13.86 ppm	42 mL	13.9 ppm	1					4/21/15 00:55	N	II
RQ1503922-06	Carbon, Total Organic (TOC)	CCB		Water	0.16 ppm	42 mL	1.0 mg/L U	1	0.4	1.0			4/21/15 01:16	N	II

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# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: R-FIA-05 **Analyst:** NMUEHLEISEN **Analysis Lot:** 440537 **Method/Testcode:** 365.1/O Phos T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503752-01	Orthophosphate as Phosphorus	CCV		Water	0.04 mg/L	10 mL	0.0435 mg/L	1					4/14/15 22:16:30	N	IV
RQ1503752-01	Orthophosphate as Phosphorus, Dissolved	CCV		Water	0.04 mg/L	10 mL	0.0435 mg/L	1					4/14/15 22:16:30	N	IV
RQ1503752-02	Orthophosphate as Phosphorus	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:17:33	N	IV
RQ1503752-02	Orthophosphate as Phosphorus, Dissolved	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:17:33	N	IV
RQ1503752-03	Orthophosphate as Phosphorus	MB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:17:33	N	IV
RQ1503752-03	Orthophosphate as Phosphorus, Dissolved	MB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:17:33	N	IV
RQ1503752-04	Orthophosphate as Phosphorus	LCS		Water	0.03 mg/L	10 mL	0.0252 mg/L	1	0.002	0.010	101		4/14/15 22:18:35	N	IV
RQ1503752-04	Orthophosphate as Phosphorus, Dissolved	LCS		Water	0.03 mg/L	10 mL	0.0252 mg/L	1	0.002	0.010	101		4/14/15 22:18:35	N	IV
R1502645-005	Orthophosphate as Phosphorus	N/A		Water	0.00 mg/L	10 mL	0.003 mg/L J	1	0.002	0.010			4/14/15 22:19:37	N	IV
R1502665-001	Orthophosphate as Phosphorus	N/A		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:20:39	N	I
R1502665-002	Orthophosphate as Phosphorus	N/A		Water	0.07 mg/L	10 mL	0.066 mg/L	1	0.002	0.010			4/14/15 22:21:41	N	I
R1502665-003	Orthophosphate as Phosphorus	N/A		Water	0.04 mg/L	10 mL	1.96 mg/L	50	0.08	0.50			4/14/15 22:22:42	N	I
R1502671-002	Orthophosphate as Phosphorus, Dissolved	N/A		Water	0.01 mg/L	10 mL	0.0087 mg/L	1	0.0016	0.0050			4/14/15 22:23:42	N	IV
RQ1503752-05	Orthophosphate as Phosphorus, Dissolved	DUP	R1502671-002	Water	0.01 mg/L	10 mL	0.009 mg/L J	1	0.002	0.010		7	4/14/15 22:24:43	N	IV
RQ1503752-06	Orthophosphate as Phosphorus, Dissolved	MS	R1502671-002	Water	0.03 mg/L	10 mL	0.033 mg/L	1	0.002	0.010	97		4/14/15 22:25:43	N	IV
R1502671-004	Orthophosphate as Phosphorus, Dissolved	N/A		Water	0.01 mg/L	10 mL	0.0123 mg/L	1	0.0016	0.0050			4/14/15 22:26:44	N	IV
R1502671-006	Orthophosphate as Phosphorus, Dissolved	N/A		Water	0.01 mg/L	10 mL	0.0136 mg/L	1	0.0016	0.0050			4/14/15 22:27:47	N	IV
RQ1503752-07	Orthophosphate as Phosphorus	CCV		Water	0.05 mg/L	10 mL	0.0475 mg/L	1					4/14/15 22:28:49	N	IV
RQ1503752-07	Orthophosphate as Phosphorus, Dissolved	CCV		Water	0.05 mg/L	10 mL	0.0475 mg/L	1					4/14/15 22:28:49	N	IV
RQ1503752-08	Orthophosphate as Phosphorus	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:29:52	N	IV
RQ1503752-08	Orthophosphate as Phosphorus, Dissolved	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:29:52	N	IV
R1502671-008	Orthophosphate as Phosphorus, Dissolved	N/A		Water	0.01 mg/L	10 mL	0.0061 mg/L	1	0.0016	0.0050			4/14/15 22:30:54	N	IV
RQ1503752-09	Orthophosphate as Phosphorus	CCV		Water	0.05 mg/L	10 mL	0.0474 mg/L	1					4/14/15 22:31:55	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

R1502645
R1502671
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Reviewed & Approved
By: CK
Date: 4/20/15

Analytical Results Summary

Instrument Name: R-FIA-05 **Analyst:** NMUEHLEISEN **Analysis Lot:** 440537 **Method/Testcode:** 365.1/O Phos D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503752-09	Orthophosphate as Phosphorus, Dissolved	CCV		Water	0.05 mg/L	10 mL	0.0474 mg/L	1					4/14/15 22:31:55	N	IV
RQ1503752-10	Orthophosphate as Phosphorus	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:32:57	N	IV
RQ1503752-10	Orthophosphate as Phosphorus, Dissolved	CCB		Water	0.00 mg/L	10 mL	0.010 mg/L U	1	0.002	0.010			4/14/15 22:32:57	N	IV

6 indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: R-Balance-02 **Analyst:** KABBOTT **Analysis Lot:** 440329 **Method/Testcode:** SM 2540 C-1997(2011)/TDS

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503590-03	Solids, Total Dissolved (TDS)	MB		Water	6.00 mg/L	100 mL	6 mg/L J	1	5	10			4/14/15 09:39	N	II
RQ1503590-04	Solids, Total Dissolved (TDS)	LCS		Water	896.00 mg/L	50 mL	896 mg/L	1	9	20	98		4/14/15 09:39	N	II
R1502491-018	Solids, Total Dissolved (TDS)	N/A		Water	1691.00 mg/L	100 mL	1690 mg/L	1	5	10			4/14/15 09:39	N	II
R1502491-019	Solids, Total Dissolved (TDS)	N/A		Water	2744.00 mg/L	50 mL	2740 mg/L	1	9	20			4/14/15 09:39	Y	II
RQ1503590-02	Solids, Total Dissolved (TDS)	DUP	R1502491-019	Water	2788.00 mg/L	50 mL	2790 mg/L	1	9	20		2	4/14/15 09:39	N	II
R1502491-020	Solids, Total Dissolved (TDS)	N/A		Water	481.00 mg/L	100 mL	481 mg/L	1	5	10			4/14/15 09:39	N	II
R1502491-021	Solids, Total Dissolved (TDS)	N/A		Water	2086.00 mg/L	50 mL	2090 mg/L	1	9	20			4/14/15 09:39	N	II
R1502491-022	Solids, Total Dissolved (TDS)	N/A		Water	800.00 mg/L	100 mL	800 mg/L	1	5	10			4/14/15 09:39	N	II
R1502491-023	Solids, Total Dissolved (TDS)	N/A		Water	405.00 mg/L	100 mL	405 mg/L	1	5	10			4/14/15 09:39	N	II
R1502491-024	Solids, Total Dissolved (TDS)	N/A		Water	1897.80 mg/L	91 mL	1900 mg/L	1	5	11			4/14/15 09:39	N	II
R1502491-025	Solids, Total Dissolved (TDS)	N/A		Water	1705.32 mg/L	94 mL	1710 mg/L	1	5	11			4/14/15 09:39	N	II
R1502491-026	Solids, Total Dissolved (TDS)	N/A		Water	434.00 mg/L	100 mL	434 mg/L	1	5	10			4/14/15 09:39	N	II
R1502491-027	Solids, Total Dissolved (TDS)	N/A		Water	526.00 mg/L	100 mL	526 mg/L	1	5	10			4/14/15 09:39	N	II
R1502617-001	Solids, Total Dissolved (TDS)	N/A		Water	419.00 mg/L	100 mL	419 mg/L	1	5	10			4/14/15 09:39	N	IV
R1502617-002	Solids, Total Dissolved (TDS)	N/A		Water	341.00 mg/L	100 mL	341 mg/L	1	5	10			4/14/15 09:39	Y	IV
RQ1503590-01	Solids, Total Dissolved (TDS)	DUP	R1502617-002	Water	364.00 mg/L	100 mL	364 mg/L	1	5	10		7	4/14/15 09:39	N	IV
R1502617-003	Solids, Total Dissolved (TDS)	N/A		Water	3.00 mg/L	100 mL	10 mg/L U	1	5	10			4/14/15 09:39	N	IV
R1502617-004	Solids, Total Dissolved (TDS)	N/A		Water	375.00 mg/L	100 mL	375 mg/L	1	5	10			4/14/15 09:39	N	IV
R1502617-005	Solids, Total Dissolved (TDS)	N/A		Water	336.00 mg/L	100 mL	336 mg/L	1	5	10			4/14/15 09:39	N	IV
R1502617-006	Solids, Total Dissolved (TDS)	N/A		Water	411.00 mg/L	100 mL	411 mg/L	1	5	10			4/14/15 09:39	N	IV
R1502629-001	Solids, Total Dissolved (TDS)	N/A		Water	600.00 mg/L	100 mL	600 mg/L	1	5	10			4/14/15 09:39	N	I
R1502640-003	Solids, Total Dissolved (TDS)	N/A		Water	774.00 mg/L	100 mL	774 mg/L	1	5	10			4/14/15 09:39	N	III
R1502645-005	Solids, Total Dissolved (TDS)	N/A		Water	338.00 mg/L	100 mL	338 mg/L	1	5	10			4/14/15 09:39	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

R1502617
R1502645
2 Lots

Reviewed & Approved
By: CK
Date: 4/20/15

Analytical Results Summary

Instrument Name: R-IC-03 **Analyst:** BKALKMAN **Analysis Lot:** 440543 **Method/Testcode:** 300.0/Br

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503676-02	Bromide	CCV		Water	2.03 mg/L	10 mL	2.03 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Bromide	CCV		Water	2.03 mg/L	10 mL	2.03 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Chloride	CCV		Water	3.30 mg/L	10 mL	3.30 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Chloride	CCV		Water	3.30 mg/L	10 mL	3.30 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Nitrate as Nitrogen	CCV		Water	1.81 mg/L	10 mL	1.81 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Nitrate as Nitrogen	CCV		Water	1.81 mg/L	10 mL	1.81 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Nitrite as Nitrogen	CCV		Water	1.87 mg/L	10 mL	1.87 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Sulfate	CCV		Water	3.28 mg/L	10 mL	3.28 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-02	Sulfate	CCV		Water	3.28 mg/L	10 mL	3.28 mg/L	1					4/14/15 12:32:05	N	IV
RQ1503676-05	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 12:43:11	N	IV
RQ1503676-05	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 12:43:11	N	IV
RQ1503676-05	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 12:43:11	N	IV
RQ1503676-05	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 12:43:11	N	IV
RQ1503676-05	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 12:43:11	N	IV
RQ1503676-05	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 12:43:11	N	IV
RQ1503676-05	Nitrite as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.03	0.10			4/14/15 12:43:11	N	IV
RQ1503676-05	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 12:43:11	N	IV
RQ1503676-05	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 12:43:11	N	IV
RQ1503676-09	Bromide	MB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 12:43:11	N	IV
RQ1503676-09	Bromide	MB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 12:43:11	N	IV
RQ1503676-09	Chloride	MB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 12:43:11	N	IV
RQ1503676-09	Chloride	MB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 12:43:11	N	IV
RQ1503676-09	Nitrate as Nitrogen	MB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 12:43:11	N	IV
RQ1503676-09	Nitrate as Nitrogen	MB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 12:43:11	N	IV
RQ1503676-09	Nitrite as Nitrogen	MB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.03	0.10			4/14/15 12:43:11	N	IV
RQ1503676-09	Sulfate	MB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 12:43:11	N	IV
RQ1503676-09	Sulfate	MB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 12:43:11	N	IV
RQ1503676-08	Bromide	LCS		Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.05	0.10	104		4/14/15 13:08:03	N	IV
RQ1503676-08	Bromide	LCS		Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.05	0.10	104		4/14/15 13:08:03	N	IV
RQ1503676-08	Chloride	LCS		Water	2.02 mg/L	10 mL	2.02 mg/L	1	0.03	0.20	101		4/14/15 13:08:03	N	IV
RQ1503676-08	Chloride	LCS		Water	2.02 mg/L	10 mL	2.02 mg/L	1	0.03	0.20	101		4/14/15 13:08:03	N	IV
RQ1503676-08	Nitrate as Nitrogen	LCS		Water	1.02 mg/L	10 mL	1.02 mg/L	1	0.02	0.10	101		4/14/15 13:08:03	N	IV
RQ1503676-08	Nitrate as Nitrogen	LCS		Water	1.02 mg/L	10 mL	1.02 mg/L	1	0.02	0.10	101		4/14/15 13:08:03	N	IV
RQ1503676-08	Nitrite as Nitrogen	LCS		Water	1.06 mg/L	10 mL	1.06 mg/L	1	0.03	0.10	106		4/14/15 13:08:03	N	IV
RQ1503676-08	Sulfate	LCS		Water	2.09 mg/L	10 mL	2.09 mg/L	1	0.19	0.20	105		4/14/15 13:08:03	N	IV
RQ1503676-08	Sulfate	LCS		Water	2.09 mg/L	10 mL	2.09 mg/L	1	0.19	0.20	105		4/14/15 13:08:03	N	IV

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Analytical Results Summary

Instrument Name: R-IC-03 **Analyst:** BKALKMAN **Analysis Lot:** 440543 **Method/Testcode:** 300.0/NO3

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
R1502645-005	Nitrate as Nitrogen	N/A		Water	0.51 mg/L	10 mL	0.5 mg/L J	10	0.2	1.0			4/14/15 13:19:09	N	IV
R1502645-005	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 13:19:09	N	IV
R1502645-005	Sulfate	N/A		Water	46.86 mg/L	10 mL	46.9 mg/L	10	1.9	2.0			4/14/15 13:19:09	N	IV
R1502629-001	Bromide	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.5	1.0			4/14/15 13:30:17	N	I
R1502629-001	Chloride	N/A		Water	14.64 mg/L	10 mL	14.6 mg/L	10	0.3	2.0			4/14/15 13:30:17	N	I
R1502629-001	Nitrate as Nitrogen	N/A		Water	0.66 mg/L	10 mL	1.0 mg/L U	10	0.2	1.0			4/14/15 13:30:17	N	I
RQ1503676-10	Bromide	MS	R1502629-001	Water	10.01 mg/L	10 mL	10.0 mg/L	10	0.5	1.0	100		4/14/15 13:41:24	N	I
RQ1503676-10	Chloride	MS	R1502629-001	Water	34.37 mg/L	10 mL	34.4 mg/L	10	0.3	2.0	99		4/14/15 13:41:24	N	I
RQ1503676-10	Nitrate as Nitrogen	MS	R1502629-001	Water	10.22 mg/L	10 mL	10.2 mg/L	10	0.2	1.0	102		4/14/15 13:41:24	N	I
RQ1503676-11	Bromide	DMS	R1502629-001	Water	10.04 mg/L	10 mL	10.0 mg/L	10	0.5	1.0	100	<1	4/14/15 13:52:29	N	I
RQ1503676-11	Chloride	DMS	R1502629-001	Water	33.87 mg/L	10 mL	33.9 mg/L	10	0.3	2.0	96	1	4/14/15 13:52:29	N	I
RQ1503676-11	Nitrate as Nitrogen	DMS	R1502629-001	Water	9.99 mg/L	10 mL	10.0 mg/L	10	0.2	1.0	100	2	4/14/15 13:52:29	N	I
R1502526-029	Chloride	N/A		Water	2692.91 mg/L	10 mL	2690 mg/L	1000	30	200			4/14/15 15:02:23	N	IV
R1502667-001	Chloride	N/A		Water	80.90 mg/L	10 mL	80.9 mg/L	10	0.3	2.0			4/14/15 15:29:16	N	I
R1502667-001	Nitrate as Nitrogen	N/A		Water	5.13 mg/L	10 mL	5.1 mg/L	10	0.2	1.0			4/14/15 15:29:16	N	I
R1502667-001	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 15:29:16	N	I
R1502667-002	Chloride	N/A		Water	10.16 mg/L	10 mL	10.2 mg/L	10	0.3	2.0			4/14/15 15:40:22	N	I
R1502667-002	Nitrate as Nitrogen	N/A		Water	2.28 mg/L	10 mL	2.3 mg/L	10	0.2	1.0			4/14/15 15:40:22	N	I
R1502667-002	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 15:40:22	N	I
R1502667-003	Chloride	N/A		Water	83.08 mg/L	10 mL	83.1 mg/L	10	0.3	2.0			4/14/15 15:51:28	N	I
R1502667-003	Nitrate as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.2	1.0			4/14/15 15:51:28	N	I
R1502667-003	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 15:51:28	N	I
R1502667-004	Nitrate as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.2	1.0			4/14/15 16:02:33	N	I
R1502667-004	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 16:02:33	N	I
RQ1503676-03	Bromide	CCV		Water	2.08 mg/L	10 mL	2.08 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Bromide	CCV		Water	2.08 mg/L	10 mL	2.08 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Chloride	CCV		Water	3.33 mg/L	10 mL	3.33 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Chloride	CCV		Water	3.33 mg/L	10 mL	3.33 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Nitrate as Nitrogen	CCV		Water	1.82 mg/L	10 mL	1.82 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Nitrate as Nitrogen	CCV		Water	1.82 mg/L	10 mL	1.82 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Nitrite as Nitrogen	CCV		Water	1.88 mg/L	10 mL	1.88 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Sulfate	CCV		Water	3.26 mg/L	10 mL	3.26 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-03	Sulfate	CCV		Water	3.26 mg/L	10 mL	3.26 mg/L	1					4/14/15 16:13:39	N	IV
RQ1503676-06	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 16:24:45	N	IV
RQ1503676-06	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 16:24:45	N	IV
RQ1503676-06	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 16:24:45	N	IV

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Analytical Results Summary

Instrument Name: R-IC-03 **Analyst:** BKALKMAN **Analysis Lot:** 440543 **Method/Testcode:** 9056A/Chloride

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503676-06	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 16:24:45	N	IV
RQ1503676-06	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 16:24:45	N	IV
RQ1503676-06	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 16:24:45	N	IV
RQ1503676-06	Nitrite as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.03	0.10			4/14/15 16:24:45	N	IV
RQ1503676-06	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 16:24:45	N	IV
RQ1503676-06	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 16:24:45	N	IV
R1502667-005	Nitrate as Nitrogen	N/A		Water	0.49 mg/L	10 mL	1.0 mg/L U	10	0.2	1.0			4/14/15 16:35:52	N	I
R1502667-005	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 16:35:52	N	I
R1502667-006	Chloride	N/A		Water	84.81 mg/L	10 mL	84.8 mg/L	10	0.3	2.0			4/14/15 16:46:59	N	I
R1502667-006	Nitrate as Nitrogen	N/A		Water	1.48 mg/L	10 mL	1.5 mg/L	10	0.2	1.0			4/14/15 16:46:59	N	I
R1502667-006	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 16:46:59	N	I
R1502667-007	Chloride	N/A		Water	56.12 mg/L	10 mL	56.1 mg/L	10	0.3	2.0			4/14/15 16:58:04	N	I
R1502667-007	Nitrate as Nitrogen	N/A		Water	4.15 mg/L	10 mL	4.2 mg/L	10	0.2	1.0			4/14/15 16:58:04	N	I
R1502667-007	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 16:58:04	N	I
R1502667-008	Chloride	N/A		Water	34.70 mg/L	10 mL	34.7 mg/L	10	0.3	2.0			4/14/15 17:09:10	N	I
R1502667-008	Nitrate as Nitrogen	N/A		Water	4.47 mg/L	10 mL	4.5 mg/L	10	0.2	1.0			4/14/15 17:09:10	N	I
R1502667-008	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 17:09:10	N	I
R1502667-009	Nitrate as Nitrogen	N/A		Water	1.04 mg/L	10 mL	1.0 mg/L	10	0.2	1.0			4/14/15 17:20:17	N	I
R1502667-009	Nitrite as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.3	1.0			4/14/15 17:20:17	N	I
R1502673-001	Bromide	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.5	1.0			4/14/15 17:42:30	N	II
R1502673-001	Chloride	N/A		Water	3.39 mg/L	10 mL	3.4 mg/L	10	0.3	2.0			4/14/15 17:42:30	N	II
R1502673-001	Nitrate as Nitrogen	N/A		Water	3.81 mg/L	10 mL	3.8 mg/L	10	0.2	1.0			4/14/15 17:42:30	N	II
R1502673-001	Sulfate	N/A		Water	8.65 mg/L	10 mL	8.7 mg/L	10	1.9	2.0			4/14/15 17:42:30	N	II
RQ1503676-12	Bromide	MS	R1502673-001	Water	10.30 mg/L	10 mL	10.3 mg/L	10	0.5	1.0	103		4/14/15 17:53:26	N	II
RQ1503676-12	Chloride	MS	R1502673-001	Water	23.18 mg/L	10 mL	23.2 mg/L	10	0.3	2.0	99		4/14/15 17:53:26	N	II
RQ1503676-12	Nitrate as Nitrogen	MS	R1502673-001	Water	13.96 mg/L	10 mL	14.0 mg/L	10	0.2	1.0	102		4/14/15 17:53:26	N	II
RQ1503676-12	Sulfate	MS	R1502673-001	Water	28.83 mg/L	10 mL	28.8 mg/L	10	1.9	2.0	101		4/14/15 17:53:26	N	II
RQ1503676-13	Bromide	DMS	R1502673-001	Water	10.16 mg/L	10 mL	10.2 mg/L	10	0.5	1.0	102	1	4/14/15 18:04:31	N	II
RQ1503676-13	Chloride	DMS	R1502673-001	Water	23.14 mg/L	10 mL	23.1 mg/L	10	0.3	2.0	99	<1	4/14/15 18:04:31	N	II
RQ1503676-13	Nitrate as Nitrogen	DMS	R1502673-001	Water	13.98 mg/L	10 mL	14.0 mg/L	10	0.2	1.0	102	<1	4/14/15 18:04:31	N	II
RQ1503676-13	Sulfate	DMS	R1502673-001	Water	28.81 mg/L	10 mL	28.8 mg/L	10	1.9	2.0	101	<1	4/14/15 18:04:31	N	II
R1502674-001	Chloride	N/A		Water	98.45 mg/L	10 mL	98.5 mg/L	10	0.3	2.0			4/14/15 18:15:36	N	II
R1502674-001	Nitrate as Nitrogen	N/A		Water	0.00 mg/L	10 mL	1.0 mg/L U	10	0.2	1.0			4/14/15 18:15:36	N	II
R1502674-001	Sulfate	N/A		Water	14.23 mg/L	10 mL	14.2 mg/L	10	1.9	2.0			4/14/15 18:15:36	N	II
RQ1503676-04	Bromide	CCV		Water	2.07 mg/L	10 mL	2.07 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Bromide	CCV		Water	2.07 mg/L	10 mL	2.07 mg/L	1					4/14/15 18:26:41	N	IV

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Analytical Results Summary

Instrument Name: R-IC-03 **Analyst:** BKALKMAN **Analysis Lot:** 440543 **Method/Testcode:** 300.0/Chloride

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
RQ1503676-04	Chloride	CCV		Water	3.33 mg/L	10 mL	3.33 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Chloride	CCV		Water	3.33 mg/L	10 mL	3.33 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Nitrate as Nitrogen	CCV		Water	1.82 mg/L	10 mL	1.82 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Nitrate as Nitrogen	CCV		Water	1.82 mg/L	10 mL	1.82 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Nitrite as Nitrogen	CCV		Water	1.89 mg/L	10 mL	1.89 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Sulfate	CCV		Water	3.26 mg/L	10 mL	3.26 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-04	Sulfate	CCV		Water	3.26 mg/L	10 mL	3.26 mg/L	1					4/14/15 18:26:41	N	IV
RQ1503676-07	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 18:37:47	N	IV
RQ1503676-07	Bromide	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.05	0.10			4/14/15 18:37:47	N	IV
RQ1503676-07	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 18:37:47	N	IV
RQ1503676-07	Chloride	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.03	0.20			4/14/15 18:37:47	N	IV
RQ1503676-07	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 18:37:47	N	IV
RQ1503676-07	Nitrate as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.02	0.10			4/14/15 18:37:47	N	IV
RQ1503676-07	Nitrite as Nitrogen	CCB		Water	0.00 mg/L	10 mL	0.10 mg/L U	1	0.03	0.10			4/14/15 18:37:47	N	IV
RQ1503676-07	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 18:37:47	N	IV
RQ1503676-07	Sulfate	CCB		Water	0.00 mg/L	10 mL	0.20 mg/L U	1	0.19	0.20			4/14/15 18:37:47	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

APPENDIX D—ANALYTICAL DATA TABLE

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B
SAMPLE ID	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015
SAMPLE DATE	20150430	20150506	20150511	20150511	20150511	20150430
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	0.22 U	0.22 U	0.22 U	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	0.34 U	0.34 U	0.34 U	NA
1,1,2-TRICHLOROETHANE	NA	NA	0.33 U	0.33 U	0.33 U	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	0.26 U	0.26 U	0.26 U	NA
1,1-DICHLOROETHANE	NA	NA	0.28 U	0.28 U	0.28 U	NA
1,1-DICHLOROETHENE	NA	NA	0.29 U	0.29 U	0.29 U	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	0.93 U	0.93 U	0.93 U	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	0.82 U	0.82 U	0.82 U	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	1.5 U	1.5 U	1.5 U	NA
1,2-DIBROMOETHANE	NA	NA	0.28 U	0.28 U	0.28 U	NA
1,2-DICHLOROBENZENE	NA	NA	0.38 U	0.38 U	0.38 U	NA
1,2-DICHLOROETHANE	NA	NA	0.32 U	0.32 U	0.32 U	NA
1,2-DICHLOROPROPANE	NA	NA	0.24 U	0.24 U	0.24 U	NA
1,3-DICHLOROBENZENE	NA	NA	0.25 U	0.25 U	0.25 U	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	0.27 U	0.27 U	0.27 U	NA
1,4-DIOXANE	NA	NA	58.9 U	58.9 U	58.9 U	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	1.8 U	1.8 U	1.8 U	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	1.3 U	1.3 U	1.3 U	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	1.5 U	1.5 U	1.5 U	NA
ACETONE	NA	NA	3.1 U	3.1 U	3.1 U	NA
BENZENE	NA	NA	0.23 U	0.23 U	0.23 U	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	0.32 U	0.32 U	0.32 U	NA
BROMODICHLOROMETHANE	NA	NA	0.27 U	0.27 U	0.27 U	NA
BROMOFORM	NA	NA	0.4 U	0.4 U	0.4 U	NA
BROMOMETHANE	NA	NA	0.43 U	0.42 U	0.41 U	NA
CARBON DISULFIDE	NA	NA	0.27 U	0.25 U	0.23 U	NA
CARBON TETRACHLORIDE	NA	NA	0.31 U	0.31 U	0.31 U	NA
CHLOROBENZENE	NA	NA	0.19 U	0.19 U	0.19 U	NA
CHLORODIBROMOMETHANE	NA	NA	0.45 U	0.45 U	0.45 U	NA
CHLOROETHANE	NA	NA	0.33 U	0.33 U	0.33 U	NA
CHLOROFORM	NA	NA	0.21 U	0.21 U	0.21 U	NA
CHLOROMETHANE	NA	NA	0.31 U	0.31 U	0.31 U	NA
CIS-1,2-DICHLOROETHENE	NA	NA	0.32 U	0.32 U	0.32 U	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B
SAMPLE ID	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015
SAMPLE DATE	20150430	20150506	20150511	20150511	20150511	20150430
CIS-1,3-DICHLOROPROPENE	NA	NA	0.31 U	0.31 U	0.31 U	NA
CYCLOHEXANE	NA	NA	0.29 U	0.29 U	0.29 U	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	1	1	1	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	0.34 U	0.34 U	0.34 U	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	0.22 U	0.22 U	0.22 U	NA
M+P-XYLENES	NA	NA	0.52 U	0.52 U	0.52 U	NA
METHYL ACETATE	NA	NA	0.32 U	0.32 U	0.32 U	NA
METHYL CYCLOHEXANE	NA	NA	0.3 U	0.3 U	0.3 U	NA
METHYL TERT-BUTYL ETHER	NA	NA	0.33 U	0.33 U	0.33 U	NA
METHYLENE CHLORIDE	NA	NA	0.45 U	0.45 U	0.45 U	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	0.33 U	0.33 U	0.33 U	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	NA	0.24 U	0.24 U	0.24 U	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	0.35 U	0.35 U	0.35 U	NA
TOLUENE	NA	NA	0.23 U	0.23 U	0.23 U	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	0.26 U	0.26 U	0.26 U	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	0.29 U	0.29 U	0.29 U	NA
TRICHLOROETHENE	NA	NA	0.33 U	0.33 U	0.33 U	NA
TRICHLOROFLUOROMETHANE	NA	NA	4.5	4.5	4.5	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	0.3 U	0.3 U	0.3 U	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	1.2	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B
SAMPLE ID	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015
SAMPLE DATE	20150430	20150506	20150511	20150511	20150511	20150430
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	NA	0.74 U	0.74 U	0.74 U	0.74 U
ARSENIC	NA	NA	1.2 J	1.15	1.1 J	1 U
BARIUM	NA	NA	130	130	130	410
BERYLLIUM	NA	NA	6.3	6.3	6.3	0.3 U
CADMIUM	NA	NA	0.37 U	0.37 U	0.37 U	1.4 J
CHROMIUM	NA	NA	2.1 J	2.1	2.1 J	1.4 J
COBALT	NA	NA	110	110	110	120 J
COPPER	NA	NA	110	110	110	44 J
IRON	NA	NA	310	300	290	380
LEAD	NA	NA	0.74 U	0.74 U	0.74 U	0.74 U
MANGANESE	NA	NA	57	56.5	56	2000 J
MERCURY	NA	NA	0.17 U	0.17 U	0.17 U	0.17 U
MOLYBDENUM	NA	NA	0.74 U	0.74 U	0.74 U	1.7 J
NICKEL	NA	NA	150	150	150	140 J
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U
SILVER	NA	NA	0.74 U	0.74 U	0.74 U	0.74 U
THALLIUM	NA	NA	0.3 U	0.3 U	0.3 U	0.36 J
VANADIUM	NA	NA	2.2 J	2.2	2.2 J	0.74 U
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	3.6	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	EXT-MW06	MRC-MW01A	MRC-MW02A			MRC-MW04B
SAMPLE ID	EXT-MW06-043015	MRC-MW-01A-050615	MRC-MW-02A-051115	MRC-MW-02A-051115-AVG	MRC-MW-02A-051115-D	MRC-MW-04B-043015
SAMPLE DATE	20150430	20150506	20150511	20150511	20150511	20150430
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW07A MRC-MW-07A-051215 20150512	MRC-MW08A MRC-MW-08A-041615 20150416	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	0.22 U	1 U	1 U	0.22 U	1 U
1,1,2,2-TETRACHLOROETHANE	NA	0.34 U	1 U	1 U	0.34 U	1 U
1,1,2-TRICHLOROETHANE	NA	0.33 U	1 U	1 U	0.33 U	1.8
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	0.26 U	1 U	1 U	0.26 U	1 U
1,1-DICHLOROETHANE	NA	0.28 U	1 U	3.6	0.28 U	25.3
1,1-DICHLOROETHENE	NA	0.29 U	1 U	19	0.29 U	178
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	0.93 U	2 U	2 U	0.93 U	2 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	0.82 U	2 U	2 U	0.82 U	2 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	1.5 U	7 U	7 U	1.5 UJ	7 U
1,2-DIBROMOETHANE	NA	0.28 U	1 U	1 U	0.28 U	1 U
1,2-DICHLOROBENZENE	NA	0.38 U	1 U	1 U	0.38 U	1 U
1,2-DICHLOROETHANE	NA	0.32 U	1 U	1 U	0.32 U	1 U
1,2-DICHLOROPROPANE	NA	0.24 U	1 U	1 U	0.24 U	1 U
1,3-DICHLOROBENZENE	NA	0.25 U	1 U	1 U	0.25 U	1 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	0.27 U	1 U	1 U	0.27 U	1 U
1,4-DIOXANE	NA	58.9 UR	320 UR	320 UR	58.9 UJ	133 J
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	1.8 U	10 U	10 U	1.8 UJ	10 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	1.3 U	5 U	5 U	1.3 UJ	5 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	1.5 U	5 U	5 U	1.5 UJ	5 U
ACETONE	NA	3.1 U	10 U	10 U	3.1 UJ	10 U
BENZENE	NA	0.23 U	1 U	1 U	0.23 U	4
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	0.32 U	1 U	1 U	0.32 U	1 U
BROMODICHLOROMETHANE	NA	0.27 U	1 U	1 U	0.27 U	1 U
BROMOFORM	NA	0.4 U	1 U	1 U	0.4 U	1 U
BROMOMETHANE	NA	0.55 U	0.46 U	1 UJ	0.39 UJ	1 U
CARBON DISULFIDE	NA	0.23 UJ	1 U	1 UJ	0.23 U	0.38 J
CARBON TETRACHLORIDE	NA	0.31 U	1 U	1 U	0.31 U	1 U
CHLOROBENZENE	NA	0.19 U	1 U	1 U	0.19 U	1 U
CHLORODIBROMOMETHANE	NA	0.45 U	1 U	1 U	0.45 U	1 U
CHLOROETHANE	NA	0.33 U	1 U	1 U	0.33 U	1 U
CHLOROFORM	NA	0.21 U	1 U	1 U	0.21 U	1 U
CHLOROMETHANE	NA	0.31 U	1 U	1 U	0.31 U	1 U
CIS-1,2-DICHLOROETHENE	NA	0.32 U	0.38 J	3.5	0.32 U	100

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW07A MRC-MW-07A-051215 20150512	MRC-MW08A MRC-MW-08A-041615 20150416	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624
CIS-1,3-DICHLOROPROPENE	NA	0.31 U	1 UJ	1 U	0.31 U	1 U
CYCLOHEXANE	NA	0.29 U	1 U	1 U	0.29 U	1 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	0.33 UJ	1 U	1 UJ	0.33 U	1 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	0.34 U	1 U	1 U	0.34 U	1 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	0.22 U	1 U	1 U	0.22 U	1 U
M+P-XYLENES	NA	0.52 U	2 U	2 U	0.52 U	2 U
METHYL ACETATE	NA	0.32 U	2 U	2 U	0.32 UJ	2 U
METHYL CYCLOHEXANE	NA	0.3 UJ	1 U	1 UJ	0.3 U	1 U
METHYL TERT-BUTYL ETHER	NA	0.33 U	1 U	1 U	0.33 U	1 U
METHYLENE CHLORIDE	NA	0.45 U	1 U	1 U	0.45 U	1 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	0.33 U	1 UJ	1 U	0.33 U	1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	0.24 U	1 U	1 U	0.24 U	1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	0.35 U	1 U	1 U	0.35 U	1.1
TOLUENE	NA	0.23 U	1 U	1 U	0.23 U	1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	0.26 U	1 U	1 U	0.26 U	1 U
TRANS-1,3-DICHLOROPROPENE	NA	0.29 U	1 U	1 U	0.29 U	1 U
TRICHLOROETHENE	NA	0.33 U	1 U	5.2	0.33 U	838
TRICHLOROFLUOROMETHANE	NA	0.24 U	1 U	1 U	0.24 U	1 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	0.3 U	1 U	0.76 J	0.3 U	2.8
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	3.3 U
ETHENE	NA	NA	NA	NA	NA	0.4 J
METHANE	NA	NA	NA	NA	NA	27.4
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	3.2	0.33	0.88	4.3 J	0.034 J	202

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW07A MRC-MW-07A-051215 20150512	MRC-MW08A MRC-MW-08A-041615 20150416	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	2.2 U	0.74 U	2.2 U	5.6	NA	2.2 U
ARSENIC	3 U	1 U	2.2 J	3 U	NA	1.6 J
BARIUM	59	150	72	41	NA	150
BERYLLIUM	0.39 J	0.74 J	0.35 J	1 U	NA	1 J
CADMIUM	0.98 J	0.37 U	1.1 U	1.1 U	NA	1.1 U
CHROMIUM	1.8 J	2 J	2.9	3	NA	2.1 J
COBALT	41	110	56	26	NA	68
COPPER	19	3.5 J	2 J	4.4 J	NA	2.5 J
IRON	66 J	47400	67600	12300	NA	62200
LEAD	2.2 U	1.2 J	1.1 J	6.2	NA	4.1
MANGANESE	440	45900	5400	2800	NA	3500
MERCURY	0.5 U	0.17 U	0.5 U	0.5 U	NA	0.14 U
MOLYBDENUM	2.2 U	0.74 U	2.2 U	1.1 U	NA	2.2 U
NICKEL	200	260	9.4	12	NA	120
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	2.2 J	1.9 U	5.6 U	5.6 U	NA	5.6 U
SILVER	2.2 U	0.74 U	2.2 U	2.2 U	NA	2.2 U
THALLIUM	1 U	0.3 U	1 U	1 U	NA	1 U
VANADIUM	2.2 U	1.6 J	3.4	4.8	NA	1.6 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	0.06 U	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW07A MRC-MW-07A-051215 20150512	MRC-MW08A MRC-MW-08A-041615 20150416	MRC-MW10A MRC-MW-10A-042015 20150420	MRC-MW11A MRC-MW-11A-041715 20150417	MRC-MW11C MRC-MW-11C-062515 20150625	MRC-MW12A MRC-MW12A-062415 20150624
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	26
AMMONIA-N	NA	NA	NA	NA	NA	0.43
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	56.1
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	0.5 U
NITRITE-N	NA	NA	NA	NA	NA	0.5 U
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	0.03
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	123
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	330
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	6

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	1 U	0.22 U	0.22 U	1 U	1 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	1 U	0.34 U	0.34 U	1 U	1 U	0.34 U
1,1,2-TRICHLOROETHANE	1.5	0.33 U	0.33 U	1 U	1.9	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	1 U	0.26 U	0.26 U	1 U	1 U	0.26 U
1,1-DICHLOROETHANE	20.5	0.28 U	0.33 J	1.2	37.5	0.28 U
1,1-DICHLOROETHENE	161	0.29 U	2.3	1.9	156	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	2 U	0.93 U	0.93 U	2 U	2 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	2 U	0.82 U	0.82 U	2 U	2 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	7 U	1.5 UJ	1.5 UJ	7 U	7 U	1.5 UJ
1,2-DIBROMOETHANE	1 U	0.28 U	0.28 U	1 U	1 U	0.28 U
1,2-DICHLOROBENZENE	1 U	0.38 U	0.38 U	1 U	1 U	0.38 U
1,2-DICHLOROETHANE	1 U	0.32 U	0.32 U	1 U	3.1	0.32 U
1,2-DICHLOROPROPANE	1 U	0.24 U	0.24 U	1 U	1 U	0.24 U
1,3-DICHLOROBENZENE	1 U	0.25 U	0.25 U	1 U	1 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	1 U	0.27 U	0.27 U	1 U	1 U	0.27 U
1,4-DIOXANE	105 J	58.9 UJ	58.9 UJ	320 U	290 J	58.9 UJ
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	10 U	1.8 UJ	1.8 UJ	10 U	138	1.8 UJ
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	5 U	1.3 UJ	1.3 UJ	5 U	5 U	1.3 UJ
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	5 U	1.5 UJ	1.5 UJ	5 U	5 U	1.5 UJ
ACETONE	10 U	3.1 UJ	3.1 UJ	10 U	63.2 U	3.1 UJ
BENZENE	4	0.23 U	0.31 J	1 U	25.4	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	1 U	0.32 U	0.32 U	1 U	1 U	0.32 U
BROMODICHLOROMETHANE	1 U	0.27 U	0.27 U	1 U	1 U	0.27 U
BROMOFORM	1 U	0.4 U	0.4 U	1 U	1 U	0.4 U
BROMOMETHANE	1 U	0.39 U	0.39 U	1 U	1 U	0.39 U
CARBON DISULFIDE	1 U	0.23 U	0.23 U	1 U	1.5	0.23 U
CARBON TETRACHLORIDE	1 U	0.31 U	0.31 U	1 U	1 U	0.31 U
CHLOROBENZENE	1 U	0.19 U	0.19 U	1 U	1 U	0.19 U
CHLORODIBROMOMETHANE	1 U	0.45 U	0.45 U	1 U	1 U	0.45 U
CHLOROETHANE	1 U	0.33 U	0.33 U	1 U	1 U	0.33 U
CHLOROFORM	1 U	0.21 U	0.21 U	1 U	1 U	0.21 U
CHLOROMETHANE	1 U	0.31 U	0.31 U	1 U	1 U	0.31 U
CIS-1,2-DICHLOROETHENE	80.4	0.32 U	1.2	20.6	859	0.32 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625
CIS-1,3-DICHLOROPROPENE	1 U	0.31 U	0.31 U	1 U	1 U	0.31 U
CYCLOHEXANE	1 U	0.29 U	0.29 U	1 U	0.3 J	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1 U	0.33 U	0.33 U	1 U	1 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	1 U	0.34 U	0.34 U	1 U	1 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	1 U	0.22 U	0.22 U	1 U	0.48 J	0.22 U
M+P-XYLENES	2 U	0.52 U	0.52 U	2 U	2 U	0.52 U
METHYL ACETATE	2 U	0.32 UJ	0.32 UJ	2 U	2 U	0.32 UJ
METHYL CYCLOHEXANE	1 U	0.3 U	0.3 U	1 U	1 U	0.3 U
METHYL TERT-BUTYL ETHER	1 U	0.33 U	0.33 U	1 U	1 U	0.33 U
METHYLENE CHLORIDE	1 U	0.45 U	0.45 U	1 U	1.2	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	1 U	0.33 U	0.33 U	1 U	1 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	1 U	0.24 U	0.24 U	1 U	1 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.86 J	0.35 U	0.35 U	1 U	1 U	0.35 U
TOLUENE	1 U	0.23 U	0.23 U	1 U	1 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1 U	0.26 U	0.26 U	4.8	1 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	1 U	0.29 U	0.29 U	1 U	1 U	0.29 U
TRICHLOROETHENE	777	0.33 U	16.8	7.1 J	2	0.33 U
TRICHLOROFLUOROMETHANE	1 U	0.24 U	0.24 U	1 U	1 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.56 J	0.3 U	0.31 J	0.41 J	2.6	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	3.3 U	NA	NA	NA	0.24 J	NA
ETHENE	2.4 U	NA	NA	NA	0.8 J	NA
METHANE	22.6	NA	NA	NA	1110	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	162	0.022 J	2.1	6.2	156	0.039 J

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Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	2.2 U	NA	NA	2.2 U	2.2 U	0.74 U
ARSENIC	3 U	NA	NA	3 U	9.9	1 UJ
BARIUM	160	NA	NA	140	280	58
BERYLLIUM	1 U	NA	NA	1 U	0.4 J	0.3 U
CADMIUM	1.1 U	NA	NA	1.1 U	1.1 U	0.37 UJ
CHROMIUM	2.2 U	NA	NA	1.3 J	3.8	6.4 J
COBALT	48	NA	NA	24	110	7.2 J
COPPER	5.6 U	NA	NA	2.4 J	5.2 J	2.7 J
IRON	52500	NA	NA	26400	215000	7500
LEAD	2.2 U	NA	NA	2.2 U	2.6	1.7 J
MANGANESE	3000	NA	NA	1800	7000	910 J
MERCURY	0.08 U	NA	NA	0.22 U	0.13 U	0.17 U
MOLYBDENUM	2.2 U	NA	NA	2.2 U	1.8 U	1.1 U
NICKEL	90	NA	NA	24	160	13 J
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	5.6 U	NA	NA	2.3 J	5.6 U	1.9 UJ
SILVER	2.2 U	NA	NA	2.2 U	2.2 U	0.74 UJ
THALLIUM	1 U	NA	NA	1 U	1 U	0.3 U
VANADIUM	2.2 U	NA	NA	2.2 U	10	6.1 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

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Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW12B MRC-MW12B-062415 20150624	MRC-MW12C MRC-MW-12C-062515 20150625	MRC-MW13A MRC-MW-13A-062515 20150625	MRC-MW14A MRC-MW14A-062415 20150624	MRC-MW14B MRC-MW14B-062415 20150624	MRC-MW14C MRC-MW-14C-062515 20150625
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	29	NA	NA	NA	527	NA
AMMONIA-N	0.16	NA	NA	NA	0.46	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	36.6	NA	NA	NA	83	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	0.5 U	NA	NA	NA	0.5 U	NA
NITRITE-N	0.5 U	NA	NA	NA	0.5 U	NA
ORTHOPHOSPHATE	0.023	NA	NA	NA	0.02	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	64.1	NA	NA	NA	0.85 J	NA
TOTAL DISSOLVED SOLIDS	194	NA	NA	NA	1270	NA
TOTAL ORGANIC CARBON	2.9	NA	NA	NA	471	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	 MRC-MW-21B-051415 20150514
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	1 U	1 U	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	NA	1 U	1 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	NA	1 U	1 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	1 U	1 U	0.26 U	0.26 U	1.1
1,1-DICHLOROETHANE	NA	41.6	1 U	2.1	2.1	15.9
1,1-DICHLOROETHENE	NA	122	1 U	0.29 U	1.8	195
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	2 U	2 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	2 U	2 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	7 U	7 U	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	NA	1 U	1 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	NA	1 U	1 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	NA	0.36 J	0.92 J	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	NA	1 U	1 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	NA	1 U	1 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	1 U	1 U	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	NA	63.1 J	320 U	58.9 UJ	58.9 U	58.9 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	10 U	2.6 J	1.8 U	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	5 U	5 U	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	5 U	5 U	1.5 U	1.5 U	1.5 U
ACETONE	NA	10 U	10 U	3.1 U	3.1 U	3.1 U
BENZENE	NA	0.99 J	163	0.23 U	0.23 U	29.5
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	1 U	1 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	NA	1 U	1 U	0.27 U	0.27 U	0.27 U
BROMOFORM	NA	1 U	1 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	NA	1 U	1 U	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	NA	1 UJ	1 U	0.23 U	0.23 U	0.23 U
CARBON TETRACHLORIDE	NA	1 U	1 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	NA	1 U	1 U	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	NA	1 U	1 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	NA	1 U	1 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	NA	1 U	1 U	0.51 J	0.21 U	0.35 J
CHLOROMETHANE	NA	1 U	1 U	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	NA	16.7	2	0.32 U	0.32 U	7.2

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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
CIS-1,3-DICHLOROPROPENE	NA	1 U	1 U	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	NA	0.51 J	37.9	0.29 U	0.29 U	1.1
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	1 UJ	1 U	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	1 U	64.7	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	1 U	4.4	0.22 U	0.22 U	14
M+P-XYLENES	NA	2 U	35.4	0.52 U	0.52 U	0.52 U
METHYL ACETATE	NA	2 U	2 U	0.32 U	0.32 U	0.32 U
METHYL CYCLOHEXANE	NA	0.49 J	16	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	NA	1 U	1 U	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	NA	1 U	1 U	0.45 J	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	1 U	5	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	1 U	1 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	9.9	1 U	0.35 U	0.37 J	8.4
TOLUENE	NA	1 U	44.7	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	1 U	1 U	0.26 U	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	NA	1 U	1 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	NA	28.5	15.5	0.33 U	1.7	708
TRICHLOROFLUOROMETHANE	NA	1 U	1 U	0.7 J	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	17.3	0.53 J	0.3 U	0.3 U	0.76 J
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	0.23 U
ETHENE	NA	NA	NA	NA	NA	0.4 U
METHANE	NA	NA	NA	NA	NA	16.8
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	16.4	68.6	3.7	6.6	1.5	47.1

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	2.2 U	2.2 U	2.2 U	0.74 U	0.74 U	0.74 U
ARSENIC	1.4 J	3 U	1.2 J	1 U	2.7 J	1 U
BARIUM	120	270	350	27	53	100
BERYLLIUM	1 U	8.6	0.38 J	3.2	0.54 J	0.67 J
CADMIUM	1.1 U	1.6	1.1 UJ	2	0.37 U	0.37 U
CHROMIUM	0.97 J	1.1 J	1.6 U	0.93 J	4.2	0.74 U
COBALT	27	370	63 J	1100	5.9	81
COPPER	2.2 J	7.6	3.5 J	240	4.2 J	1.9 U
IRON	23300	10700	65900	110	5700	29200
LEAD	2.2 U	0.83 J	2.2 U	0.84 J	1.4 J	0.74 U
MANGANESE	4300	5900	8200 J	3000	740	3400
MERCURY	0.5 U	0.5 U	0.5 U	NA	0.17 U	0.17 U
MOLYBDENUM	2.2 U	2.2 U	2.2 UJ	0.74 U	0.93 J	0.74 U
NICKEL	6.9	360	77 J	1500	6.9	83
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	5.6 U	5.6 U	5.6 UJ	4.2 J	1.9 U	1.9 U
SILVER	2.2 U	2.2 U	2.2 UJ	0.74 U	0.74 U	0.74 U
THALLIUM	1 U	1 U	1 U	0.3 U	0.3 U	0.3 U
VANADIUM	2.2 U	1.2 J	2.2 UJ	0.8 J	5.1	0.74 U
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	0.06 U	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW15A MRC-MW-15A-041515 20150415	MRC-MW16A MRC-MW-16A-041515 20150415	MRC-MW17A MRC-MW-17A-050515 20150505	MRC-MW19A MRC-MW-19A-050615 20150506	MRC-MW21A MRC-MW-21A-051415 20150514	MRC-MW-21B-051415 20150514
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	43
AMMONIA-N	NA	NA	NA	NA	NA	0.11 U
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	74.1
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	0.38 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	0.092 U
NITRITE-N	NA	NA	NA	NA	NA	0.11 U
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	0.0025 U
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	2 J
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	180
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A
SAMPLE ID	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315
SAMPLE DATE	20150514	20150514	20150506	20150506	20150513	20150513
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	NA	0.22 U	0.22 U	NA	1 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	NA	0.34 U	0.34 U	NA	1 U
1,1,2-TRICHLOROETHANE	0.33 U	NA	0.33 U	0.33 U	NA	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	1.1	NA	0.26 U	0.26 U	NA	1 U
1,1-DICHLOROETHANE	15.9	NA	0.28 U	1.6	NA	1 U
1,1-DICHLOROETHENE	195	NA	0.29 U	5.2	NA	0.58 J
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	NA	0.93 U	0.93 U	NA	2 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	NA	0.82 U	0.82 U	NA	2 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	NA	1.5 U	1.5 U	NA	7 U
1,2-DIBROMOETHANE	0.28 U	NA	0.28 U	0.28 U	NA	1 U
1,2-DICHLOROBENZENE	0.38 U	NA	0.38 U	0.38 U	NA	1 U
1,2-DICHLOROETHANE	0.32 U	NA	0.32 U	0.32 U	NA	1 U
1,2-DICHLOROPROPANE	0.24 U	NA	0.24 U	0.24 U	NA	1 U
1,3-DICHLOROBENZENE	0.25 U	NA	0.25 U	0.25 U	NA	1 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	NA	0.27 U	0.27 U	NA	1 U
1,4-DIOXANE	58.9 U	NA	58.9 UJ	58.9 UJ	NA	320 UJ
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	NA	1.8 U	1.8 U	NA	10 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	NA	1.3 U	1.3 U	NA	5 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	NA	1.5 U	1.5 U	NA	5 U
ACETONE	3.1 U	NA	3.1 U	3.1 U	NA	10 U
BENZENE	29.5	NA	0.23 U	0.24 J	NA	0.69 J
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	NA	0.32 U	0.32 U	NA	1 U
BROMODICHLOROMETHANE	0.27 U	NA	0.27 U	0.27 U	NA	1 U
BROMOFORM	0.4 U	NA	0.4 U	0.4 U	NA	1 U
BROMOMETHANE	0.39 U	NA	0.39 U	0.39 U	NA	1 U
CARBON DISULFIDE	0.23 U	NA	0.23 U	0.23 U	NA	1 U
CARBON TETRACHLORIDE	0.31 U	NA	0.31 U	0.31 U	NA	1 U
CHLOROBENZENE	0.19 U	NA	0.19 U	0.19 U	NA	1 U
CHLORODIBROMOMETHANE	0.45 U	NA	0.45 U	0.45 U	NA	1 U
CHLOROETHANE	0.33 U	NA	0.33 U	0.33 U	NA	1 U
CHLOROFORM	0.35 J	NA	0.21 U	0.21 U	NA	1 U
CHLOROMETHANE	0.31 U	NA	0.31 U	0.31 U	NA	1 U
CIS-1,2-DICHLOROETHENE	7.2	NA	0.32 U	0.32 U	NA	9.2

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A
SAMPLE ID	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315
SAMPLE DATE	20150514	20150514	20150506	20150506	20150513	20150513
CIS-1,3-DICHLOROPROPENE	0.31 U	NA	0.31 U	0.31 U	NA	1 U
CYCLOHEXANE	1.1	NA	0.29 U	0.29 U	NA	1 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	NA	0.33 U	0.33 U	NA	1 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	NA	0.34 U	0.34 U	NA	1 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	14	NA	0.22 U	0.22 U	NA	1 U
M+P-XYLENES	0.52 U	NA	0.52 U	0.52 U	NA	2 U
METHYL ACETATE	0.32 U	NA	0.32 U	0.32 U	NA	2 U
METHYL CYCLOHEXANE	0.3 U	NA	0.3 U	0.3 U	NA	1 U
METHYL TERT-BUTYL ETHER	0.33 U	NA	0.33 U	0.33 U	NA	1 U
METHYLENE CHLORIDE	0.45 U	NA	0.45 U	0.45 U	NA	1 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	NA	0.33 U	0.33 U	NA	1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	NA	0.24 U	0.24 U	NA	1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	8.4	NA	0.35 U	0.35 U	NA	1 U
TOLUENE	0.23 U	NA	0.23 U	0.23 U	NA	1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	NA	0.26 U	0.26 U	NA	1 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	NA	0.29 U	0.29 U	NA	1 U
TRICHLOROETHENE	708	NA	0.33 U	1.8	NA	147
TRICHLOROFLUOROMETHANE	0.24 U	NA	0.24 U	0.24 U	NA	1 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.76 J	NA	0.3 U	0.3 U	NA	1 U
VOLATILE GASES (UG/L)						
ETHANE	0.23 U	NA	NA	NA	1.2 J	3.3 U
ETHENE	0.4 U	NA	NA	NA	2.4 U	2.4 U
METHANE	16.8	NA	NA	NA	302	11.4
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	47.1	NA	0.29	7.4	NA	1.2

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A
SAMPLE ID	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315
SAMPLE DATE	20150514	20150514	20150506	20150506	20150513	20150513
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.74 U	0.74 U	0.74 U	2.2 U	2.2 U
ARSENIC	1 U	1 U	1 U	1 U	3.6	3 U
BARIUM	100	100	40	110	270	170
BERYLLIUM	0.675	0.68 J	0.3 U	0.3 U	31	0.78 J
CADMIUM	0.37 U	0.37 U	0.37 U	0.37 U	1.4	1.1 U
CHROMIUM	0.74 U	0.74 U	0.78 J	0.74 U	1.2 J	2.4
COBALT	81	81	22	110	200	67
COPPER	1.9 U	1.9 U	1.9 U	1.9 U	43	4.5 J
IRON	29750	30300	290	660	250	11700
LEAD	0.74 U	0.74 U	0.74 U	0.74 U	2.2 U	1.7 J
MANGANESE	3400	3400	980	2200	33100	2400
MERCURY	0.17 U	0.17 U	NA	NA	0.5 U	0.5 U
MOLYBDENUM	0.74 U	0.74 U	0.74 U	0.74 U	2.2 U	2.2 U
NICKEL	83.5	84	47	190	690	84
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	1.9 U	1.9 U	1.9 U	13	5.6 U
SILVER	0.74 U	0.74 U	0.74 U	0.74 U	2.2 U	2.2 U
THALLIUM	0.3 U	0.3 U	0.3 U	0.3 U	1 U	1 U
VANADIUM	0.74 U	0.74 U	0.74 U	0.77 J	2.2 U	2 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW21B		MRC-MW22A	MRC-MW22B	MRC-MW24A	MRC-MW25A
SAMPLE ID	MRC-MW-21B-051415-AVG	MRC-MW-21B-051415-D	MRC-MW-22A-050615	MRC-MW-22B-050615	MRC-MW-24A-051315	MRC-MW-25A-051315
SAMPLE DATE	20150514	20150514	20150506	20150506	20150513	20150513
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	43	NA	NA	NA	3 J	66
AMMONIA-N	0.11 U	NA	NA	NA	0.37	0.15
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	74.1	NA	NA	NA	515	431
DISSOLVED ORGANIC CARBON	0.38 J	NA	NA	NA	0.67 J	1.7
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	0.092 U	NA	NA	NA	0.15 J	0.5 U
NITRITE-N	0.11 U	NA	NA	NA	0.5 U	0.5 U
ORTHOPHOSPHATE	0.0025 U	NA	NA	NA	0.02 U	0.02 U
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	2 J	NA	NA	NA	1.2 J	18.8
TOTAL DISSOLVED SOLIDS	180	NA	NA	NA	954	742
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW26A	MRC-MW27A		MRC-MW27B		MRC-MW27C
SAMPLE ID	MRC-MW-26A-042315	MRC-MW-27A-042115	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115
SAMPLE DATE	20150423	20150421	20150511	20150421	20150511	20150421
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	0.22 U	NA	0.22 U	NA	0.22 U
1,1,2,2-TETRACHLOROETHANE	NA	0.34 U	NA	0.34 U	NA	0.34 U
1,1,2-TRICHLOROETHANE	NA	0.33 U	NA	0.34 J	NA	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	0.26 U	NA	0.26 U	NA	0.26 U
1,1-DICHLOROETHANE	NA	1.9	NA	9.9	NA	0.28 U
1,1-DICHLOROETHENE	NA	2	NA	18.8	NA	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	0.93 U	NA	0.93 U	NA	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	0.82 U	NA	0.82 U	NA	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	1.5 U	NA	1.5 U	NA	1.5 U
1,2-DIBROMOETHANE	NA	0.28 U	NA	0.28 U	NA	0.28 U
1,2-DICHLOROBENZENE	NA	0.38 U	NA	0.38 U	NA	0.38 U
1,2-DICHLOROETHANE	NA	0.32 U	NA	0.32 U	NA	0.32 U
1,2-DICHLOROPROPANE	NA	0.24 U	NA	0.24 U	NA	0.24 U
1,3-DICHLOROBENZENE	NA	0.25 U	NA	0.25 U	NA	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	0.27 U	NA	0.27 U	NA	0.27 U
1,4-DIOXANE	NA	58.9 U	NA	58.9 U	NA	58.9 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	1.8 U	NA	1.8 U	NA	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	1.3 U	NA	1.3 U	NA	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	1.5 U	NA	1.5 U	NA	1.5 U
ACETONE	NA	3.1 U	NA	3.1 U	NA	3.1 U
BENZENE	NA	1.7	NA	1	NA	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	0.32 U	NA	0.32 U	NA	0.32 U
BROMODICHLOROMETHANE	NA	0.27 U	NA	0.27 U	NA	0.27 U
BROMOFORM	NA	0.4 U	NA	0.4 U	NA	0.4 U
BROMOMETHANE	NA	0.57 U	NA	0.39 UJ	NA	0.53 U
CARBON DISULFIDE	NA	0.23 U	NA	0.23 UJ	NA	0.23 U
CARBON TETRACHLORIDE	NA	0.31 U	NA	0.31 U	NA	0.31 U
CHLOROBENZENE	NA	0.19 U	NA	0.19 U	NA	0.19 U
CHLORODIBROMOMETHANE	NA	0.45 U	NA	0.45 U	NA	0.45 U
CHLOROETHANE	NA	0.33 U	NA	0.33 U	NA	0.33 U
CHLOROFORM	NA	0.21 U	NA	0.21 U	NA	0.21 U
CHLOROMETHANE	NA	0.31 U	NA	0.31 U	NA	0.31 U
CIS-1,2-DICHLOROETHENE	NA	43.5	NA	455	NA	1 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW26A	MRC-MW27A		MRC-MW27B		MRC-MW27C
SAMPLE ID	MRC-MW-26A-042315	MRC-MW-27A-042115	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115
SAMPLE DATE	20150423	20150421	20150511	20150421	20150511	20150421
CIS-1,3-DICHLOROPROPENE	NA	0.31 UJ	NA	0.31 U	NA	0.31 UJ
CYCLOHEXANE	NA	1.1	NA	0.29 U	NA	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	0.33 U	NA	0.33 UJ	NA	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	0.34 U	NA	0.34 U	NA	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	0.22 U	NA	0.22 U	NA	0.22 U
M+P-XYLENES	NA	0.52 U	NA	0.52 U	NA	0.52 U
METHYL ACETATE	NA	0.32 U	NA	0.32 U	NA	0.32 U
METHYL CYCLOHEXANE	NA	0.3 U	NA	0.3 U	NA	0.3 U
METHYL TERT-BUTYL ETHER	NA	23.6	NA	6.7	NA	0.33 U
METHYLENE CHLORIDE	NA	0.45 U	NA	0.45 U	NA	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	1 UJ	NA	0.33 U	NA	1 UJ
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	0.24 U	NA	0.24 U	NA	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	0.35 U	NA	1.1	NA	0.35 U
TOLUENE	NA	0.23 U	NA	0.23 U	NA	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	4.4	NA	6 J	NA	0.26 U
TRANS-1,3-DICHLOROPROPENE	NA	0.29 U	NA	0.29 U	NA	0.29 U
TRICHLOROETHENE	NA	103	NA	1250	NA	0.33 U
TRICHLOROFLUOROMETHANE	NA	0.24 U	NA	0.24 U	NA	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	20.8	NA	9.9	NA	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	NA	5.6	NA	0.23 U	NA	NA
ETHENE	NA	2.4	NA	0.4 U	NA	NA
METHANE	NA	1640	NA	6.1	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW26A	MRC-MW27A		MRC-MW27B		MRC-MW27C
SAMPLE ID	MRC-MW-26A-042315	MRC-MW-27A-042115	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115
SAMPLE DATE	20150423	20150421	20150511	20150421	20150511	20150421
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.74 U	NA	0.74 U	NA	NA
ARSENIC	1 U	4.2	NA	1 U	NA	NA
BARIUM	440	530	NA	39	NA	NA
BERYLLIUM	16	1.9	NA	2	NA	NA
CADMIUM	0.37 U	0.37 U	NA	0.37 U	NA	NA
CHROMIUM	0.74 U	1.1 J	NA	0.92 J	NA	NA
COBALT	410	580	NA	210	NA	NA
COPPER	1.9 U	2.8 J	NA	8.3	NA	NA
IRON	30100	110000	NA	140	NA	NA
LEAD	0.74 U	0.74 U	NA	0.74 U	NA	NA
MANGANESE	8700	28800	NA	120	NA	NA
MERCURY	0.17 U	0.17 U	NA	0.17 U	NA	NA
MOLYBDENUM	0.74 U	0.74 U	NA	0.74 U	NA	NA
NICKEL	210	240	NA	240	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	1.9 U	NA	1.9 U	NA	NA
SILVER	0.74 U	0.74 U	NA	0.74 U	NA	NA
THALLIUM	0.3 U	0.3 U	NA	0.49 J	NA	NA
VANADIUM	0.74 U	0.74 U	NA	0.74 U	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW26A	MRC-MW27A		MRC-MW27B		MRC-MW27C
SAMPLE ID	MRC-MW-26A-042315	MRC-MW-27A-042115	MRC-MW-27A-051115	MRC-MW-27B-042115	MRC-MW-27B-051115	MRC-MW-27C-042115
SAMPLE DATE	20150423	20150421	20150511	20150421	20150511	20150421
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	44	NA	5 J	NA	NA
AMMONIA-N	NA	1.6	NA	0.14 U	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	726	NA	78.8	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	2.7	NA	1	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	0.037 U	NA	0.037 U	NA	NA
NITRITE-N	NA	0.22 U	NA	0.044 U	NA	NA
ORTHOPHOSPHATE	NA	0.0025 U	NA	0.0047 J	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	3.8	NA	7	NA	NA
TOTAL DISSOLVED SOLIDS	NA	1180	NA	94	NA	NA
TOTAL ORGANIC CARBON	NA	3.9	NA	1	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW29A MRC-MW-29A-042115 20150421	MRC-MW30A MRC-MW-30A-041515 20150415	MRC-MW31A MRC-MW-31A-041515 20150415	MRC-MW32A MRC-MW-32A-041315 20150413	MRC-MW33A MRC-MW-33A-041515 20150415	MRC-MW34A MRC-MW-34A-041315 20150413
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	0.22 U	NA	0.22 U
1,1,1-TRICHLOROETHANE	0.22 U	NA	NA	0.36 U	1 U	0.36 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	NA	NA	0.25 U	1 U	0.25 U
1,1,2-TRICHLOROETHANE	0.33 U	NA	NA	NA	1 U	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	NA	NA	0.31 U	1 U	0.31 U
1,1-DICHLOROETHANE	4.8	NA	NA	0.2 U	1 U	0.2 U
1,1-DICHLOROETHENE	3.1	NA	NA	0.57 U	0.3 J	0.57 U
1,1-DICHLOROPROPENE	NA	NA	NA	0.29 U	NA	0.29 U
1,2,3-TRICHLOROBENZENE	0.93 U	NA	NA	0.82 U	2 U	0.82 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	0.7 U	NA	0.7 U
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	NA	NA	0.23 U	2 U	0.23 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	0.2 U	NA	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	NA	NA	0.74 U	7 U	0.74 U
1,2-DIBROMOETHANE	0.28 U	NA	NA	0.24 U	1 U	0.24 U
1,2-DICHLOROBENZENE	0.38 U	NA	NA	0.21 U	1 U	0.21 U
1,2-DICHLOROETHANE	0.32 U	NA	NA	0.36 U	1 U	0.36 U
1,2-DICHLOROPROPANE	0.24 U	NA	NA	0.2 U	1 U	0.2 U
1,3-DICHLOROBENZENE	0.25 U	NA	NA	0.2 U	1 U	0.2 U
1,3-DICHLOROPROPANE	NA	NA	NA	0.27 U	NA	0.27 U
1,4-DICHLOROBENZENE	0.27 U	NA	NA	0.2 U	1 U	0.2 U
1,4-DIOXANE	58.9 U	NA	NA	NA	320 UR	NA
2,2-DICHLOROPROPANE	NA	NA	NA	0.27 U	NA	0.27 U
2-BUTANONE	1.8 U	NA	NA	0.81 U	10 U	0.81 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	0.44 UJ	NA	0.44 UJ
2-CHLOROTOLUENE	NA	NA	NA	0.2 U	NA	0.2 U
2-HEXANONE	1.3 U	NA	NA	1.7 U	5 U	1.7 U
4-CHLOROTOLUENE	NA	NA	NA	0.24 U	NA	0.24 U
4-ISOPROPYLTOLUENE	NA	NA	NA	0.2 U	NA	0.2 U
4-METHYL-2-PENTANONE	1.5 U	NA	NA	0.67 U	5 U	0.67 U
ACETONE	3.1 U	NA	NA	1.3 U	10 U	1.3 U
BENZENE	0.23 U	NA	NA	0.2 U	1 U	0.2 U
BROMOBENZENE	NA	NA	NA	0.28 U	NA	0.28 U
BROMOCHLOROMETHANE	0.32 U	NA	NA	0.32 U	1 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	NA	NA	0.32 U	1 U	0.32 U
BROMOFORM	0.4 U	NA	NA	0.42 U	1 U	0.42 U
BROMOMETHANE	0.42 U	NA	NA	0.29 UJ	0.64 U	0.29 UJ
CARBON DISULFIDE	0.23 UJ	NA	NA	0.22 U	1 UJ	0.22 U
CARBON TETRACHLORIDE	0.31 U	NA	NA	0.45 U	1 U	0.45 U
CHLOROBENZENE	0.19 U	NA	NA	0.29 U	1 U	0.29 U
CHLORODIBROMOMETHANE	0.45 U	NA	NA	0.31 U	1 U	0.31 U
CHLOROETHANE	0.33 U	NA	NA	0.24 U	1 U	0.24 U
CHLOROFORM	0.21 U	NA	NA	0.25 U	1 U	0.25 U
CHLOROMETHANE	0.31 U	NA	NA	0.21 U	1 U	0.21 U
CIS-1,2-DICHLOROETHENE	4.5	NA	NA	0.3 U	1.1	0.3 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW29A MRC-MW-29A-042115 20150421	MRC-MW30A MRC-MW-30A-041515 20150415	MRC-MW31A MRC-MW-31A-041515 20150415	MRC-MW32A MRC-MW-32A-041315 20150413	MRC-MW33A MRC-MW-33A-041515 20150415	MRC-MW34A MRC-MW-34A-041315 20150413
CIS-1,3-DICHLOROPROPENE	0.31 U	NA	NA	0.24 U	1 U	0.24 U
CYCLOHEXANE	0.29 U	NA	NA	NA	1 U	NA
DIBROMOMETHANE	NA	NA	NA	0.32 U	NA	0.32 U
DICHLORODIFLUOROMETHANE	0.33 UJ	NA	NA	0.46 U	1 UJ	0.46 U
DIISOPROPYL ETHER	NA	NA	NA	0.2 U	NA	0.2 U
ETHYL TERT-BUTYL ETHER	NA	NA	NA	0.2 U	NA	0.2 U
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	NA	NA	0.2 U	1 U	0.2 U
HEXACHLOROBUTADIENE	NA	NA	NA	0.62 U	NA	0.62 U
ISOPROPYLBENZENE	0.22 U	NA	NA	0.2 U	1 U	0.2 U
M+P-XYLENES	0.52 U	NA	NA	0.33 U	2 U	0.33 U
METHYL ACETATE	0.32 U	NA	NA	NA	2 U	NA
METHYL CYCLOHEXANE	0.3 UJ	NA	NA	NA	1 UJ	NA
METHYL TERT-BUTYL ETHER	3.8	NA	NA	0.29 U	1.9	0.29 U
METHYLENE CHLORIDE	0.45 U	NA	NA	0.6 U	1 U	0.6 U
NAPHTHALENE	NA	NA	NA	0.2 U	NA	0.2 U
N-BUTYLBENZENE	NA	NA	NA	0.21 U	NA	0.21 U
N-PROPYLBENZENE	NA	NA	NA	0.2 U	NA	0.2 U
O-XYLENE	0.33 U	NA	NA	0.2 U	1 U	0.2 U
SEC-BUTYLBENZENE	NA	NA	NA	0.27 U	NA	0.27 U
STYRENE	0.24 U	NA	NA	0.2 U	1 U	0.2 U
TERT-AMYL METHYL ETHER	NA	NA	NA	0.2 U	NA	0.2 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	0.2 U	NA	0.2 U
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	11 U	NA	11 U
TETRACHLOROETHENE	0.35 U	NA	NA	0.3 U	1 U	0.3 U
TOLUENE	0.23 U	NA	NA	0.2 U	1 U	0.2 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	0.53 U	NA	0.53 U
TRANS-1,2-DICHLOROETHENE	0.26 U	NA	NA	0.33 U	1 U	0.33 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	NA	NA	0.2 U	1 U	0.2 U
TRICHLOROETHENE	10.6	NA	NA	0.56 J	1.1	14
TRICHLOROFLUOROMETHANE	0.24 U	NA	NA	0.2 U	1 U	0.2 U
VINYL ACETATE	NA	NA	NA	1.1 U	NA	1.1 U
VINYL CHLORIDE	0.77 J	NA	NA	0.32 U	1 U	0.32 U
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW29A MRC-MW-29A-042115 20150421	MRC-MW30A MRC-MW-30A-041515 20150415	MRC-MW31A MRC-MW-31A-041515 20150415	MRC-MW32A MRC-MW-32A-041315 20150413	MRC-MW33A MRC-MW-33A-041515 20150415	MRC-MW34A MRC-MW-34A-041315 20150413
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.8 J	2.2 U	NA	2.2 U	NA
ARSENIC	1 U	3 U	3 U	NA	3 U	NA
BARIUM	280	59	95	NA	43	NA
BERYLLIUM	6.8	1 U	5.4	NA	4.3	NA
CADMIUM	0.72 J	1.1 U	1.1 U	NA	1.1 U	NA
CHROMIUM	1.1 J	2 J	0.87 J	NA	0.81 J	NA
COBALT	310	6.6	49	NA	47	NA
COPPER	9.9	2.6 J	23	NA	5.1 J	NA
IRON	11700	90	67 U	NA	52 J	NA
LEAD	0.74 U	2.2 U	2.2 U	NA	2.2 U	NA
MANGANESE	3200	46	20	NA	250	NA
MERCURY	NA	0.5 U	0.5 U	NA	0.5 U	NA
MOLYBDENUM	0.74 U	0.94 U	2.2 U	NA	2.2 U	NA
NICKEL	160	6.2	88	NA	35	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	5.6 U	5.6 U	NA	5.6 U	NA
SILVER	0.74 U	2.2 U	2.2 U	NA	2.2 U	NA
THALLIUM	0.3 U	1 U	1 U	NA	1 U	NA
VANADIUM	0.92 J	6.7	2.2 U	NA	2.2 U	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW29A MRC-MW-29A-042115 20150421	MRC-MW30A MRC-MW-30A-041515 20150415	MRC-MW31A MRC-MW-31A-041515 20150415	MRC-MW32A MRC-MW-32A-041315 20150413	MRC-MW33A MRC-MW-33A-041515 20150415	MRC-MW34A MRC-MW-34A-041315 20150413
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE	20150413	20150511	20150413	20150504	20150504	20150504
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	0.22 U	NA	0.22 U	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.36 U	NA	0.36 U	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.25 U	NA	0.25 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	NA	NA	NA	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31 U	NA	0.31 U	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	0.76 J	NA	0.2 U	0.28 U	0.28 U	0.28 U
1,1-DICHLOROETHENE	0.57 U	NA	0.57 U	0.29 U	0.29 U	0.29 U
1,1-DICHLOROPROPENE	0.29 U	NA	0.29 U	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.82 U	NA	0.82 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	0.7 U	NA	0.7 U	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.23 U	NA	0.23 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	0.2 U	NA	0.2 U	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.74 U	NA	0.74 U	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	0.24 U	NA	0.24 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.21 U	NA	0.21 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.36 U	NA	0.36 U	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.2 U	NA	0.2 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.2 U	NA	0.2 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	0.27 U	NA	0.27 U	NA	NA	NA
1,4-DICHLOROBENZENE	0.2 U	NA	0.2 U	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	NA	NA	NA	58.9 U	58.9 U	58.9 U
2,2-DICHLOROPROPANE	0.27 U	NA	0.27 U	NA	NA	NA
2-BUTANONE	0.81 U	NA	0.81 U	1.8 U	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	0.44 UJ	NA	0.44 UJ	NA	NA	NA
2-CHLOROTOLUENE	0.2 U	NA	0.2 U	NA	NA	NA
2-HEXANONE	1.7 U	NA	1.7 U	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	0.24 U	NA	0.24 U	NA	NA	NA
4-ISOPROPYLTOLUENE	0.2 U	NA	0.2 U	NA	NA	NA
4-METHYL-2-PENTANONE	0.67 U	NA	0.67 U	1.5 U	1.5 U	1.5 U
ACETONE	1.3 U	NA	1.3 U	3.1 U	3.1 U	3.1 U
BENZENE	0.21 J	NA	0.2 U	0.23 U	0.23 U	0.23 U
BROMOBENZENE	0.28 U	NA	0.28 U	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	NA	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.32 U	NA	0.32 U	0.27 U	0.27 U	0.27 U
BROMOFORM	0.42 U	NA	0.42 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.29 UJ	NA	0.29 UJ	0.6 J	0.43 J	0.41 J
CARBON DISULFIDE	0.22 U	NA	0.22 U	0.23 U	0.23 U	0.23 U
CARBON TETRACHLORIDE	2.9	NA	0.45 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	0.29 U	NA	0.29 U	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	0.31 U	NA	0.31 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	0.24 U	NA	0.24 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	1.2	NA	0.25 U	0.21 U	0.21 U	0.21 U
CHLOROMETHANE	0.21 U	NA	0.21 U	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	13	NA	0.3 U	0.84 J	5.5	0.32 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE	20150413	20150511	20150413	20150504	20150504	20150504
CIS-1,3-DICHLOROPROPENE	0.24 U	NA	0.24 U	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	NA	NA	NA	0.29 U	0.29 U	0.29 U
DIBROMOMETHANE	0.32 U	NA	0.32 U	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.46 U	NA	0.46 U	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	0.2 U	NA	0.2 U	NA	NA	NA
ETHYL TERT-BUTYL ETHER	0.2 U	NA	0.2 U	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.2 U	NA	0.2 U	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	0.62 U	NA	0.62 U	NA	NA	NA
ISOPROPYLBENZENE	0.2 U	NA	0.2 U	0.22 U	0.22 U	0.22 U
M+P-XYLENES	0.33 U	NA	0.33 U	0.52 U	0.52 U	0.52 U
METHYL ACETATE	NA	NA	NA	0.32 UR	0.32 UR	0.32 UR
METHYL CYCLOHEXANE	NA	NA	NA	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	19	NA	0.29 U	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	0.6 U	NA	0.6 U	0.45 U	0.45 U	0.45 U
NAPHTHALENE	0.2 U	NA	0.2 U	NA	NA	NA
N-BUTYLBENZENE	0.21 U	NA	0.21 U	NA	NA	NA
N-PROPYLBENZENE	0.2 U	NA	0.2 U	NA	NA	NA
O-XYLENE	0.2 U	NA	0.2 U	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	0.27 U	NA	0.27 U	NA	NA	NA
STYRENE	0.2 U	NA	0.2 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	0.2 U	NA	0.2 U	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	0.2 U	NA	0.2 U	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	11 U	NA	11 U	NA	NA	NA
TETRACHLOROETHENE	0.3 U	NA	0.3 U	0.35 U	0.35 U	0.35 U
TOLUENE	0.2 U	NA	0.2 U	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	0.53 U	NA	0.53 U	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.94 J	NA	0.33 U	0.26 U	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	0.2 U	NA	0.2 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	15	NA	0.22 U	33	18.2	0.33 U
TRICHLOROFLUOROMETHANE	0.2 U	NA	0.2 U	0.24 U	0.24 U	0.24 U
VINYL ACETATE	1.1 U	NA	1.1 U	NA	NA	NA
VINYL CHLORIDE	2.2	NA	0.32 U	0.3 U	0.3 U	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	0.38 J	NA	NA	0.23 U	0.23 U	NA
ETHENE	0.11 U	NA	NA	0.4 U	0.4 U	NA
METHANE	91	NA	NA	0.34 U	0.34 U	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE	20150413	20150511	20150413	20150504	20150504	20150504
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.304 U	NA	NA	0.74 U	NA	NA
ARSENIC	0.359 U	NA	NA	1.7 J	NA	NA
BARIUM	151	NA	NA	46	NA	NA
BERYLLIUM	10.1	NA	NA	0.39 J	NA	NA
CADMIUM	0.36 J	NA	NA	0.37 U	NA	NA
CHROMIUM	0.82 U	NA	NA	2.3	NA	NA
COBALT	138	NA	NA	3.7 J	NA	NA
COPPER	41.3	NA	NA	1.9 U	NA	NA
IRON	119	NA	NA	560	NA	NA
LEAD	0.271 U	NA	NA	1.1 J	NA	NA
MANGANESE	511	NA	NA	28	NA	NA
MERCURY	0.04 U	NA	NA	0.17 U	NA	NA
MOLYBDENUM	0.103 U	NA	NA	0.74 U	NA	NA
NICKEL	164	NA	NA	3.4 J	NA	NA
POTASSIUM	7240	NA	NA	NA	NA	NA
SELENIUM	0.829 J	NA	NA	4.4 J	NA	NA
SILVER	0.062 U	NA	NA	0.74 U	NA	NA
THALLIUM	0.279 J	NA	NA	0.3 U	NA	NA
VANADIUM	0.935 J	NA	NA	2.8	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW34B		MRC-MW34C	MRC-MW37A	MRC-MW37B	MRC-MW37C
SAMPLE ID	MRC-MW-34B-041315	MRC-MW-34B-051115	MRC-MW-34C-041315	MRC-MW-37A-050415	MRC-MW-37B-050415	MRC-MW-37C-050415
SAMPLE DATE	20150413	20150511	20150413	20150504	20150504	20150504
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	39	31	NA
AMMONIA-N	0.034 J	NA	NA	0.054 U	0.054 U	NA
CARBONATE ALKALINITY	0.3 U	NA	NA	NA	NA	NA
CHLORIDE	186	NA	NA	33.2	41.1	NA
DISSOLVED ORGANIC CARBON	NA	1.4	NA	2.8	7.7	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	0.5 J	NA	NA	6.7	0.8	NA
NITRITE-N	0.3 U	NA	NA	0.044 U	0.044 U	NA
ORTHOPHOSPHATE	0.003 J	NA	NA	0.0025 U	0.052	NA
SILICON DIOXIDE	8.5	NA	NA	NA	NA	NA
SULFATE	46.9	NA	NA	241	27.8	NA
TOTAL DISSOLVED SOLIDS	338	NA	NA	530	194	NA
TOTAL ORGANIC CARBON	1.5	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	1 U	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	1 U	NA	NA	NA
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	1 U	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	1 U	NA	NA	NA
1,1-DICHLOROETHANE	0.28 U	0.28 U	1 U	NA	NA	NA
1,1-DICHLOROETHENE	0.29 U	0.29 U	1 U	NA	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	2 U	NA	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	2 U	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	7 U	NA	NA	NA
1,2-DIBROMOETHANE	0.28 U	0.28 U	1 U	NA	NA	NA
1,2-DICHLOROBENZENE	0.38 U	0.38 U	1 U	NA	NA	NA
1,2-DICHLOROETHANE	0.32 U	0.32 U	1 U	NA	NA	NA
1,2-DICHLOROPROPANE	0.24 U	0.24 U	1 U	NA	NA	NA
1,3-DICHLOROBENZENE	0.25 U	0.25 U	1 U	NA	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	1 U	NA	NA	NA
1,4-DIOXANE	58.9 U	58.9 U	320 U	NA	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 U	10 U	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	5 U	NA	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	5 U	NA	NA	NA
ACETONE	3.1 U	3.1 U	10 U	NA	NA	NA
BENZENE	0.23 U	0.23 U	1 U	NA	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	1 U	NA	NA	NA
BROMODICHLOROMETHANE	0.27 U	0.27 U	1 U	NA	NA	NA
BROMOFORM	0.4 U	0.4 U	1 U	NA	NA	NA
BROMOMETHANE	0.5 U	0.55 U	0.42 U	NA	NA	NA
CARBON DISULFIDE	0.23 U	0.23 U	1 U	NA	NA	NA
CARBON TETRACHLORIDE	0.31 U	0.31 U	1 U	NA	NA	NA
CHLOROBENZENE	0.19 U	0.19 U	1 U	NA	NA	NA
CHLORODIBROMOMETHANE	0.45 U	0.45 U	1 U	NA	NA	NA
CHLOROETHANE	0.33 U	0.33 U	1 U	NA	NA	NA
CHLOROFORM	9.9	0.21 U	1 U	NA	NA	NA
CHLOROMETHANE	0.31 J	0.31 U	0.49 J	NA	NA	NA
CIS-1,2-DICHLOROETHENE	0.32 U	0.33 J	1 U	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	1 U	NA	NA	NA
CYCLOHEXANE	0.29 U	0.29 U	1 U	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	1 U	NA	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	1 U	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	1 U	NA	NA	NA
M+P-XYLENES	0.52 U	0.52 U	2 U	NA	NA	NA
METHYL ACETATE	0.32 U	0.32 U	2 U	NA	NA	NA
METHYL CYCLOHEXANE	0.3 U	0.3 U	1 U	NA	NA	NA
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	1 U	NA	NA	NA
METHYLENE CHLORIDE	0.45 U	0.45 U	1 U	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	1 U	NA	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	1 U	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	0.48 J	1 U	NA	NA	NA
TOLUENE	0.23 U	0.23 U	1 U	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	1 U	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	1 U	NA	NA	NA
TRICHLOROETHENE	0.33 U	0.56 J	1 U	NA	NA	NA
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	1 U	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	1 U	NA	NA	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	0.43	NA	NA	0.18

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1221	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1232	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1242	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1248	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1254	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1260	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1262	NA	NA	NA	NA	0.5 UJ	0.48 UJ
AROCLOR-1268	NA	NA	NA	NA	0.5 UJ	0.48 UJ
TOTAL AROCLOR	NA	NA	NA	NA	0.5 UJ	0.48 UJ
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	NA	2.2 U	2.2 U	NA	NA
ARSENIC	NA	NA	3 U	5 J	NA	NA
BARIUM	NA	NA	640	760	NA	NA
BERYLLIUM	NA	NA	0.65 J	13	NA	NA
CADMIUM	NA	NA	1.1 U	1.1 UJ	NA	NA
CHROMIUM	NA	NA	1.3 J	1.9 J	NA	NA
COBALT	NA	NA	340	310 J	NA	NA
COPPER	NA	NA	4.4 J	8.9 J	NA	NA
IRON	NA	NA	70000	136000	NA	NA
LEAD	NA	NA	2.2 U	2.2 U	NA	NA
MANGANESE	NA	NA	18400	6200 J	NA	NA
MERCURY	NA	NA	0.5 U	0.5 U	NA	NA
MOLYBDENUM	NA	NA	2.2 U	2.2 UJ	NA	NA
NICKEL	NA	NA	220	390 J	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	5.6 U	13 J	NA	NA
SILVER	NA	NA	2.2 U	0.76 J	NA	NA
THALLIUM	NA	NA	1 U	1 U	NA	NA
VANADIUM	NA	NA	2.2 U	2.2 UJ	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	1.1	NA	0.06 U	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW38A MRC-MW-38A-042715 20150427	MRC-MW38B MRC-MW-38B-042715 20150427	MRC-MW41A MRC-MW-41A-051315 20150513	MRC-MW42A MRC-MW-42A-051315 20150513	MRC-MW43A MRC-MW-43A-041415 20150414	MRC-MW44A MRC-MW-44A-041415 20150414
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW46A	MRC-MW48A	MRC-MW49A	MRC-MW50A		
SAMPLE ID	MRC-MW-46A-050115	MRC-MW-48A-051315	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D
SAMPLE DATE	20150501	20150513	20150424	20150505	20150505	20150505
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	1 U	NA	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	NA	1 U	NA	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	NA	0.7 J	NA	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	1 U	NA	1 U	1 U	1 U
1,1-DICHLOROETHANE	NA	1 U	NA	1 U	1 U	1 U
1,1-DICHLOROETHENE	NA	21	NA	1 U	1 U	1 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	2 U	NA	2 U	2 U	2 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	2 U	NA	2 U	2 U	2 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	7 U	NA	7 U	7 U	7 U
1,2-DIBROMOETHANE	NA	1 U	NA	1 U	1 U	1 U
1,2-DICHLOROBENZENE	NA	1 U	NA	1 U	1 U	1 U
1,2-DICHLOROETHANE	NA	1 U	NA	1 U	1 U	1 U
1,2-DICHLOROPROPANE	NA	1 U	NA	1 U	1 U	1 U
1,3-DICHLOROBENZENE	NA	1 U	NA	1 U	1 U	1 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	1 U	NA	1 U	1 U	1 U
1,4-DIOXANE	NA	320 UJ	NA	320 U	320 U	320 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	10 U	NA	10 U	10 U	10 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	5 U	NA	5 U	5 U	5 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	5 U	NA	5 U	5 U	5 U
ACETONE	NA	12 U	NA	10 U	10 U	10 U
BENZENE	NA	0.44 J	NA	0.95 J	0.885	0.82 J
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	1 U	NA	1 U	1 U	1 U
BROMODICHLOROMETHANE	NA	1 U	NA	1 U	1 U	1 U
BROMOFORM	NA	1 U	NA	1 U	1 U	1 U
BROMOMETHANE	NA	1 U	NA	0.59 U	0.515 U	0.44 U
CARBON DISULFIDE	NA	2.4	NA	1 U	1 U	1 U
CARBON TETRACHLORIDE	NA	1 U	NA	1 U	1 U	1 U
CHLOROBENZENE	NA	1 U	NA	1 U	1 U	1 U
CHLORODIBROMOMETHANE	NA	1 U	NA	1 U	1 U	1 U
CHLOROETHANE	NA	1 U	NA	1 U	1 U	1 U
CHLOROFORM	NA	1 U	NA	1 U	1 U	1 U
CHLOROMETHANE	NA	1 U	NA	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	NA	2190	NA	0.46 J	0.495	0.53 J

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW46A	MRC-MW48A	MRC-MW49A	MRC-MW50A		
SAMPLE ID	MRC-MW-46A-050115	MRC-MW-48A-051315	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D
SAMPLE DATE	20150501	20150513	20150424	20150505	20150505	20150505
CIS-1,3-DICHLOROPROPENE	NA	1 U	NA	1 U	1 U	1 U
CYCLOHEXANE	NA	0.85 J	NA	1 U	1 U	1 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	1 U	NA	1 U	1 U	1 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	1 U	NA	1 U	1 U	1 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	1.4	NA	1 U	1 U	1 U
M+P-XYLENES	NA	2 U	NA	2 U	2 U	2 U
METHYL ACETATE	NA	2 U	NA	2 U	2 U	2 U
METHYL CYCLOHEXANE	NA	1 U	NA	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	NA	1 U	NA	1 U	1 U	1 U
METHYLENE CHLORIDE	NA	1 U	NA	1 U	1 U	1 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	1.1	NA	1 U	1 U	1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	1 U	NA	1 U	1 U	1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	1.7	NA	1 U	1 U	1 U
TOLUENE	NA	0.69 J	NA	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	16.8	NA	0.39 J	0.385	0.38 J
TRANS-1,3-DICHLOROPROPENE	NA	1 U	NA	1 U	1 U	1 U
TRICHLOROETHENE	NA	378	NA	11.2	11.45	11.7
TRICHLOROFLUOROMETHANE	NA	1 U	NA	1 U	1 U	1 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	172	NA	1 U	1 U	1 U
VOLATILE GASES (UG/L)						
ETHANE	NA	41.9	NA	NA	NA	NA
ETHENE	NA	52.6	NA	NA	NA	NA
METHANE	NA	6160	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW46A	MRC-MW48A	MRC-MW49A	MRC-MW50A		
SAMPLE ID	MRC-MW-46A-050115	MRC-MW-48A-051315	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D
SAMPLE DATE	20150501	20150513	20150424	20150505	20150505	20150505
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	3.1	2.2 U	0.74 U	2.2 U	2.2 U	2.2 U
ARSENIC	1 U	1.2 J	2.5 J	2.1 J	1.9	1.7 J
BARIUM	140	470	270	100	100	100
BERYLLIUM	0.44 J	3.6	14	2.2	2.15	2.1
CADMIUM	0.37 U	1.1 U	1.8	1.1 UJ	1.1 U	1.1 UJ
CHROMIUM	1.5 J	1.4 J	1.2 J	1.2 U	1.25 U	1.3 U
COBALT	12	100	720	46 J	45	44 J
COPPER	8.6	5.6 U	82	16 J	16	16 J
IRON	200	83100	91	1100	1050	1000
LEAD	0.74 U	2.2 U	1.5 J	1.4 J	1.45	1.5 J
MANGANESE	58	14400	960	260 J	255	250 J
MERCURY	0.17 U	0.5 U	0.17 U	0.5 U	0.5 U	0.5 U
MOLYBDENUM	1.8 J	2.2 U	0.74 U	2.2 UJ	2.2 U	2.2 UJ
NICKEL	25	51	1500	43 J	41.5	40 J
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	5.6 U	7.9	8.4 J	8.45	8.5 J
SILVER	0.74 U	2.2 U	0.9 J	2.2 UJ	2.2 U	2.2 UJ
THALLIUM	0.3 U	1 U	0.81 J	0.51 J	0.445	0.38 J
VANADIUM	2.2 J	2.2 U	0.74 U	1.2 J	1.2	1.2 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	0.23	0.25	0.27

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW46A	MRC-MW48A	MRC-MW49A	MRC-MW50A		
SAMPLE ID	MRC-MW-46A-050115	MRC-MW-48A-051315	MRC-MW-49A-042415	MRC-MW-50A-050515	MRC-MW-50A-050515-AVG	MRC-MW-50A-050515-D
SAMPLE DATE	20150501	20150513	20150424	20150505	20150505	20150505
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	143	NA	NA	NA	NA
AMMONIA-N	NA	0.07 J	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	139	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	7.9	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	0.5 U	NA	NA	NA	NA
NITRITE-N	NA	0.5 U	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	0.02 U	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	2.3 J	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	430	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW52A MRC-MW-52A-042015 20150420	MRC-MW53A MRC-MW-53A-041615 20150416	MRC-MW53B MRC-MW-53B-041615 20150416	MRC-MW54A MRC-MW-54A-041615 20150416	MRC-MW57A MRC-MW-57A-042415 20150424	 MRC-MW-58A-042315 20150423
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	0.22 U	0.22 U	NA	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	NA	0.34 U	0.34 U	NA	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	NA	0.33 U	0.33 U	NA	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	0.26 U	0.26 U	NA	0.26 U	0.26 U
1,1-DICHLOROETHANE	NA	0.28 U	0.37 J	NA	0.28 U	0.28 U
1,1-DICHLOROETHENE	NA	0.29 U	16.2	NA	0.29 U	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	0.93 U	0.93 U	NA	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	0.82 U	0.82 U	NA	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	1.5 U	1.5 U	NA	1.5 U	1.5 U
1,2-DIBROMOETHANE	NA	0.28 U	0.28 U	NA	0.28 U	0.28 U
1,2-DICHLOROBENZENE	NA	0.38 U	0.38 U	NA	0.38 U	0.38 U
1,2-DICHLOROETHANE	NA	0.32 U	0.32 U	NA	0.32 U	0.32 U
1,2-DICHLOROPROPANE	NA	0.24 U	0.24 U	NA	0.24 U	0.24 U
1,3-DICHLOROBENZENE	NA	0.25 U	0.25 U	NA	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	0.27 U	0.27 U	NA	0.27 U	0.27 U
1,4-DIOXANE	NA	58.9 UR	58.9 UR	NA	58.9 U	58.9 UR
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	1.8 U	1.8 U	NA	4.9 J	1.8 UJ
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	1.3 U	1.3 U	NA	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	1.5 U	1.5 U	NA	1.5 U	1.5 U
ACETONE	NA	3.1 U	3.1 U	NA	57.3	3.1 U
BENZENE	NA	10.3	1.2	NA	0.23 U	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	0.32 U	0.32 U	NA	0.32 U	0.32 U
BROMODICHLOROMETHANE	NA	0.27 U	0.27 U	NA	0.27 U	0.27 U
BROMOFORM	NA	0.4 U	0.4 U	NA	0.4 U	0.4 U
BROMOMETHANE	NA	0.52 U	0.39 U	NA	0.49 U	0.39 U
CARBON DISULFIDE	NA	0.23 U	0.23 U	NA	0.23 U	0.23 U
CARBON TETRACHLORIDE	NA	0.31 U	0.5 J	NA	0.31 U	0.31 U
CHLOROBENZENE	NA	0.19 U	0.19 U	NA	0.19 U	0.19 U
CHLORODIBROMOMETHANE	NA	0.45 U	0.45 U	NA	0.45 U	0.45 U
CHLOROETHANE	NA	0.33 U	0.33 U	NA	0.33 U	0.33 U
CHLOROFORM	NA	0.21 U	0.21 U	NA	0.21 U	0.21 U
CHLOROMETHANE	NA	0.31 U	0.31 U	NA	0.36 J	0.36 J
CIS-1,2-DICHLOROETHENE	NA	7.2	13.6	NA	0.32 U	0.32 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW52A MRC-MW-52A-042015 20150420	MRC-MW53A MRC-MW-53A-041615 20150416	MRC-MW53B MRC-MW-53B-041615 20150416	MRC-MW54A MRC-MW-54A-041615 20150416	MRC-MW57A MRC-MW-57A-042415 20150424	MRC-MW-58A-042315 20150423
CIS-1,3-DICHLOROPROPENE	NA	0.31 UJ	0.31 UJ	NA	0.31 U	0.31 U
CYCLOHEXANE	NA	0.29 U	0.29 U	NA	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	0.33 U	0.33 U	NA	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	0.34 U	0.34 U	NA	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	0.22 U	0.22 U	NA	0.22 U	0.22 U
M+P-XYLENES	NA	0.52 U	0.52 U	NA	0.52 U	0.52 U
METHYL ACETATE	NA	0.32 U	0.32 U	NA	0.32 U	0.32 U
METHYL CYCLOHEXANE	NA	0.3 U	0.3 U	NA	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	NA	7.1	0.33 U	NA	0.33 U	0.33 U
METHYLENE CHLORIDE	NA	0.45 U	0.45 U	NA	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	0.38 J	0.33 U	NA	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	0.24 U	0.24 U	NA	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	0.35 U	0.35 U	NA	0.35 U	0.35 U
TOLUENE	NA	0.23 U	0.23 U	NA	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	0.34 J	0.26 U	NA	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	NA	0.29 U	0.29 U	NA	0.29 U	0.29 U
TRICHLOROETHENE	NA	41	246	NA	0.33 U	0.33 U
TRICHLOROFLUOROMETHANE	NA	0.24 U	0.24 U	NA	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	0.3 U	0.3 U	NA	0.3 U	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	4	14.1	0.2	NA	0.38

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW52A MRC-MW-52A-042015 20150420	MRC-MW53A MRC-MW-53A-041615 20150416	MRC-MW53B MRC-MW-53B-041615 20150416	MRC-MW54A MRC-MW-54A-041615 20150416	MRC-MW57A MRC-MW-57A-042415 20150424	 MRC-MW-58A-042315 20150423
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	2.2 U	1.1 J	0.86 J	NA	0.74 U	NA
ARSENIC	3.5	1.3 J	1 U	NA	1.6 J	NA
BARIUM	850	310	210	NA	340	NA
BERYLLIUM	71	2.9	1	NA	0.3 U	NA
CADMIUM	2.5	2	0.37 U	NA	0.37 U	NA
CHROMIUM	1.6 J	2.7	1.2 J	NA	1.4 J	NA
COBALT	2000	1400	57	NA	39	NA
COPPER	100	41	5.9	NA	15	NA
IRON	10300	260	1400	NA	18400	NA
LEAD	2.7	0.74 U	0.74 U	NA	0.74 U	NA
MANGANESE	26200	1600	1100	NA	7800	NA
MERCURY	0.5 U	0.43 J	0.17 U	NA	0.17 U	NA
MOLYBDENUM	2.2 U	0.93 U	0.78 U	NA	1.2 J	NA
NICKEL	1400	1200	81	NA	14	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	9.9	2.4 J	1.9 U	NA	1.9 U	NA
SILVER	2.2 U	0.74 U	0.74 U	NA	0.74 U	NA
THALLIUM	1.1	0.3 U	0.3 U	NA	0.3 U	NA
VANADIUM	1.7 J	1.3 J	0.74 U	NA	0.99 J	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	0.06 UJ	2.6	4.1	0.06 U	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW52A MRC-MW-52A-042015 20150420	MRC-MW53A MRC-MW-53A-041615 20150416	MRC-MW53B MRC-MW-53B-041615 20150416	MRC-MW54A MRC-MW-54A-041615 20150416	MRC-MW57A MRC-MW-57A-042415 20150424	MRC-MW-58A-042315 20150423
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW58A		MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE	20150423	20150423	20150424	20150422	20150422	20150511
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	NA	0.22 U	0.22 U	NA
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	NA	0.34 U	0.34 U	NA
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	NA	0.33 U	0.98 J	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	NA	0.26 U	0.26 U	NA
1,1-DICHLOROETHANE	0.28 U	0.28 U	NA	0.28 U	0.28 U	NA
1,1-DICHLOROETHENE	0.29 U	0.29 U	NA	3.1	8.6	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	NA	0.93 U	0.93 U	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	NA	0.95 J	0.82 U	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	NA	1.5 U	1.5 U	NA
1,2-DIBROMOETHANE	0.28 U	0.28 U	NA	0.28 U	0.28 U	NA
1,2-DICHLOROBENZENE	0.38 U	0.38 U	NA	0.38 U	0.38 U	NA
1,2-DICHLOROETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	NA
1,2-DICHLOROPROPANE	0.24 U	0.24 U	NA	0.24 U	0.24 U	NA
1,3-DICHLOROBENZENE	0.25 U	0.25 U	NA	0.25 U	0.25 U	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	NA	0.27 U	0.27 U	NA
1,4-DIOXANE	58.9 R	58.9 UR	NA	58.9 UR	58.9 UR	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 UJ	NA	1.8 U	1.8 U	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	NA	1.3 U	1.3 U	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	NA	1.5 U	1.5 U	NA
ACETONE	3.1 U	3.1 U	NA	3.7 J	3.1 U	NA
BENZENE	0.23 U	0.23 U	NA	0.72 J	0.35 J	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	NA
BROMODICHLOROMETHANE	0.27 U	0.27 U	NA	0.27 U	0.27 U	NA
BROMOFORM	0.4 U	0.4 U	NA	0.4 U	0.4 U	NA
BROMOMETHANE	0.47 U	0.55 U	NA	0.39 U	0.39 U	NA
CARBON DISULFIDE	0.23 U	0.23 U	NA	0.29 U	0.23 U	NA
CARBON TETRACHLORIDE	0.31 U	0.31 U	NA	0.31 U	0.31 U	NA
CHLOROBENZENE	0.19 U	0.19 U	NA	0.19 U	0.19 U	NA
CHLORODIBROMOMETHANE	0.45 U	0.45 U	NA	0.45 U	0.45 U	NA
CHLOROETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	NA
CHLOROFORM	0.21 U	0.21 U	NA	0.21 U	0.21 U	NA
CHLOROMETHANE	0.2575	0.31 U	NA	0.31 U	0.31 U	NA
CIS-1,2-DICHLOROETHENE	0.32 U	0.32 U	NA	789	170	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW58A		MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE	20150423	20150423	20150424	20150422	20150422	20150511
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	NA	0.31 U	0.31 U	NA
CYCLOHEXANE	0.29 U	0.29 U	NA	1.7	0.29 U	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	NA	0.34 U	0.34 U	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	NA	0.95 J	0.22 U	NA
M+P-XYLENES	0.52 U	0.52 U	NA	0.52 U	0.52 U	NA
METHYL ACETATE	0.32 U	0.32 U	NA	0.32 U	0.32 U	NA
METHYL CYCLOHEXANE	0.3 U	0.3 U	NA	0.3 U	0.3 U	NA
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	NA	0.33 U	0.33 U	NA
METHYLENE CHLORIDE	0.45 U	0.45 U	NA	0.45 U	0.45 U	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	NA	0.33 U	0.33 U	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	NA	0.24 U	0.24 U	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	0.35 U	NA	11	14.8	NA
TOLUENE	0.23 U	0.23 U	NA	0.72 J	0.29 J	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	NA	6.4	1.9	NA
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	NA	0.29 U	0.29 U	NA
TRICHLOROETHENE	0.33 U	0.33 U	NA	741	4070	NA
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	NA	0.69 J	0.24 U	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	NA	122	4.6	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	0.23 U	NA
ETHENE	NA	NA	NA	NA	0.4 U	NA
METHANE	NA	NA	NA	NA	54.9	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	0.37	0.36	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW58A		MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE	20150423	20150423	20150424	20150422	20150422	20150511
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	NA	0.74 U	0.74 U	0.74 U	NA
ARSENIC	NA	NA	1 U	1 U	1 U	NA
BARIUM	NA	NA	180	59	46	NA
BERYLLIUM	NA	NA	1.9	0.91 J	0.3 U	NA
CADMIUM	NA	NA	0.37 U	0.37 U	0.37 U	NA
CHROMIUM	NA	NA	0.9 J	0.74 U	0.74 U	NA
COBALT	NA	NA	39	57 J	30 J	NA
COPPER	NA	NA	4.3 J	1.9 U	1.9 U	NA
IRON	NA	NA	2500	27200	5000	NA
LEAD	NA	NA	0.74 U	0.74 U	0.74 U	NA
MANGANESE	NA	NA	2800	4000	2000	NA
MERCURY	NA	NA	0.17 U	0.17 U	0.17 U	NA
MOLYBDENUM	NA	NA	0.74 U	0.74 U	0.74 U	NA
NICKEL	NA	NA	29	63	61	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	1.9 U	1.9 U	1.9 U	NA
SILVER	NA	NA	0.74 U	0.74 U	0.74 U	NA
THALLIUM	NA	NA	0.3 U	0.3 U	0.3 U	NA
VANADIUM	NA	NA	0.74 U	0.74 U	0.74 U	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	0.06 U	0.06 U	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW58A		MRC-MW59A	MRC-MW60A	MRC-MW60B	
SAMPLE ID	MRC-MW-58A-042315-AVG	MRC-MW-58A-042315-D	MRC-MW-59A-042415	MRC-MW-60A-042215	MRC-MW-60B-042215	MRC-MW-60B-051115
SAMPLE DATE	20150423	20150423	20150424	20150422	20150422	20150511
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	39	NA
AMMONIA-N	NA	NA	NA	NA	1.02	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	40.6	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	0.32 J	0.43 J
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	0.092 U	NA
NITRITE-N	NA	NA	NA	NA	0.11 U	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	0.0025 U	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	3.8 J	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	82	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	NA	NA	0.22 U	NA	NA
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	0.34 U	NA	NA
1,1,2-TRICHLOROETHANE	NA	NA	NA	0.33 U	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	NA	NA	0.26 U	NA	NA
1,1-DICHLOROETHANE	NA	NA	NA	3.9	NA	NA
1,1-DICHLOROETHENE	NA	NA	NA	3.3	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	0.93 U	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	0.82 U	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	NA	NA	1.5 UJ	NA	NA
1,2-DIBROMOETHANE	NA	NA	NA	0.28 U	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	0.38 U	NA	NA
1,2-DICHLOROETHANE	NA	NA	NA	0.32 U	NA	NA
1,2-DICHLOROPROPANE	NA	NA	NA	0.24 U	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	0.25 U	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	0.27 U	NA	NA
1,4-DIOXANE	NA	NA	NA	58.9 UJ	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	1.8 UJ	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	NA	NA	1.3 UJ	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	NA	NA	1.5 UJ	NA	NA
ACETONE	NA	NA	NA	3.1 UJ	NA	NA
BENZENE	NA	NA	NA	0.23 U	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	NA	NA	0.32 U	NA	NA
BROMODICHLOROMETHANE	NA	NA	NA	0.27 U	NA	NA
BROMOFORM	NA	NA	NA	0.4 U	NA	NA
BROMOMETHANE	NA	NA	NA	0.39 U	NA	NA
CARBON DISULFIDE	NA	NA	NA	0.23 U	NA	NA
CARBON TETRACHLORIDE	NA	NA	NA	0.31 U	NA	NA
CHLOROBENZENE	NA	NA	NA	0.19 U	NA	NA
CHLORODIBROMOMETHANE	NA	NA	NA	0.45 U	NA	NA
CHLOROETHANE	NA	NA	NA	0.33 U	NA	NA
CHLOROFORM	NA	NA	NA	0.21 U	NA	NA
CHLOROMETHANE	NA	NA	NA	0.31 U	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	5.2	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505
CIS-1,3-DICHLOROPROPENE	NA	NA	NA	0.31 U	NA	NA
CYCLOHEXANE	NA	NA	NA	0.29 U	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA	NA	0.33 U	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	NA	NA	0.34 U	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	NA	NA	0.22 U	NA	NA
M+P-XYLENES	NA	NA	NA	0.52 U	NA	NA
METHYL ACETATE	NA	NA	NA	0.32 UJ	NA	NA
METHYL CYCLOHEXANE	NA	NA	NA	0.3 U	NA	NA
METHYL TERT-BUTYL ETHER	NA	NA	NA	0.33 U	NA	NA
METHYLENE CHLORIDE	NA	NA	NA	0.45 U	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	0.33 U	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	NA	NA	0.24 U	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	NA	0.35 U	NA	NA
TOLUENE	NA	NA	NA	0.23 U	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	0.26 U	NA	NA
TRANS-1,3-DICHLOROPROPENE	NA	NA	NA	0.29 U	NA	NA
TRICHLOROETHENE	NA	NA	NA	5.9	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	0.24 U	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	NA	NA	1	NA	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	6.7	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	0.018 U	0.018 U	NA	NA	NA
DICHLOROBIPHENYLS	NA	0.0044 U	0.0044 U	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	0.011 U	0.011 U	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	0.01 U	0.01 U	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	0.0017 U	0.0017 U	NA	NA	NA
NONACHLOROBIPHENYLS	NA	0.019 U	0.019 U	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	0.0084 U	0.0084 U	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	0.0088 U	0.0088 U	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	0.014 U	0.0054 U	NA	NA	NA
TRICHLOROBIPHENYLS	NA	0.0048 J	0.0034 U	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.342 U	0.304 U	0.74 U	2.2 U	2.2 U
ARSENIC	1.9 J	1.2	0.359 U	1 UJ	9.6	4.3 J
BARIUM	890	67.5	89.9	290	660	2300
BERYLLIUM	18	2.2	0.09 J	1.3	300	200
CADMIUM	1.9	0.021 U	0.021 U	0.37 UJ	9.1	10 J
CHROMIUM	1.7 J	0.476 U	0.933 U	1.1 J	4.3	2 U
COBALT	850	17.4	44.5	260 J	8600	1500 J
COPPER	15	0.779 J	0.354 J	2.9 J	2000	160 J
IRON	110	2760	23500	41900	10100	1100
LEAD	4.4	0.271 U	0.271 U	0.74 U	8.9	1.7 J
MANGANESE	17100	700	1310	2000 J	14500	7200 J
MERCURY	0.17 U	0.04 U	0.04 U	0.17 U	0.5 U	0.5 U
MOLYBDENUM	0.74 U	0.48 U	0.145 U	0.74 UJ	2.2 U	2.2 UJ
NICKEL	480	52.6	76.4	340 J	14200	4800 J
POTASSIUM	NA	5450	15300	NA	NA	NA
SELENIUM	5.4 J	0.233 J	0.177 U	1.9 UJ	32	16 J
SILVER	0.74 U	0.062 U	0.062 U	0.74 UJ	2.2 U	0.87 J
THALLIUM	0.3 U	0.024 U	0.056 U	0.3 U	1.7	0.49 J
VANADIUM	0.8 J	0.432 U	0.432 U	0.74 UJ	1.9 J	1.2 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW61A MRC-MW-61A-050115 20150501	MRC-MW62A MRC-MW-62A-041315 20150413	MRC-MW62C MRC-MW-62C-041315 20150413	MRC-MW63A MRC-MW-63A-062515 20150625	MRC-MW67A MRC-MW-67A-050515 20150505	MRC-MW68A MRC-MW-68A-050515 20150505
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505	MRC-MW70A MRC-MW-70A-062515 20150625	MRC-MW70B MRC-MW-70B-062515 20150625	MRC-MW71A MRC-MW-71A-041615 20150416	 MRC-MW-71B-041615 20150416
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	1 U	1 U	0.22 U	0.22 U	0.22 U	1.2
1,1,2,2-TETRACHLOROETHANE	1 U	1 U	0.34 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	1 U	1 U	0.33 U	2.1	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	1 U	1 U	0.26 U	0.26 U	0.26 U	0.9 J
1,1-DICHLOROETHANE	1 U	1 U	1.2	51	0.28 U	4.1
1,1-DICHLOROETHENE	1 U	1 U	3.7	349	2	58
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	2 U	2 U	0.93 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	2 U	2 U	0.82 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	7 U	7 U	1.5 UJ	1.5 UJ	1.5 U	1.5 U
1,2-DIBROMOETHANE	1 U	1 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	1 U	1 U	0.38 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	1 U	1 U	0.32 U	0.32 U	0.32 U	0.5 J
1,2-DICHLOROPROPANE	1 U	1 U	0.24 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	1 U	1 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	1 U	1 U	0.27 U	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	320 U	320 U	58.9 UJ	189 J	58.9 UR	58.9 UR
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	10 U	10 U	4.5 U	1.8 UJ	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	5 U	5 U	1.3 UJ	1.3 UJ	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	5 U	5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 U
ACETONE	12.3	10 U	3.9 U	3.1 UJ	3.1 U	3.1 U
BENZENE	0.34 J	1 U	0.23 U	4.6	0.23 U	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	1 U	1 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	1 U	1 U	0.27 U	0.27 U	0.27 U	0.27 U
BROMOFORM	1 U	1 U	0.4 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.41 U	0.46 U	0.39 U	0.39 U	0.64 U	0.39 U
CARBON DISULFIDE	1 U	1 U	0.23 U	0.23 U	0.23 UJ	0.23 U
CARBON TETRACHLORIDE	1 U	1 U	0.31 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	1 U	1 U	0.19 U	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	1 U	1 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	1 U	1 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	1 U	1 U	0.21 U	0.21 U	0.21 U	0.21 U
CHLOROMETHANE	1 U	1 U	0.31 U	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	13.4	145	0.32 U	6.7

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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505	MRC-MW70A MRC-MW-70A-062515 20150625	MRC-MW70B MRC-MW-70B-062515 20150625	MRC-MW71A MRC-MW-71A-041615 20150416	MRC-MW-71B-041615 20150416
CIS-1,3-DICHLOROPROPENE	1 U	1 U	0.31 U	0.31 U	0.31 U	0.31 UJ
CYCLOHEXANE	1 U	1 U	0.29 U	0.29 U	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1 U	1 U	0.33 U	0.33 U	0.33 UJ	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	1 U	1 U	0.34 U	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	1 U	1 U	0.22 U	0.22 U	0.22 U	0.22 U
M+P-XYLENES	2 U	2 U	0.52 U	0.52 U	0.52 U	0.52 U
METHYL ACETATE	2 U	2 U	0.32 UJ	0.32 UJ	0.32 U	0.32 U
METHYL CYCLOHEXANE	1 U	1 U	0.3 U	0.3 U	0.3 UJ	0.3 U
METHYL TERT-BUTYL ETHER	1 U	1 U	0.33 U	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	1 U	1 U	0.6 J	0.45 U	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	1 U	1 U	0.33 U	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	1 U	1 U	0.24 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	1 U	1 U	0.35 U	2.6	0.35 U	0.76 J
TOLUENE	1 U	1 U	0.23 U	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1 U	1 U	0.26 U	2	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	1 U	1 U	0.29 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	1 U	1 U	0.33 U	1170	0.33 U	45.5
TRICHLOROFLUOROMETHANE	1 U	1 U	0.24 U	0.24 U	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	1 U	1 U	3.9	5.2	0.3 U	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	2	0.32	2	311	0.29	19.3

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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505	MRC-MW70A MRC-MW-70A-062515 20150625	MRC-MW70B MRC-MW-70B-062515 20150625	MRC-MW71A MRC-MW-71A-041615 20150416	MRC-MW-71B-041615 20150416
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	2.4	NA	0.74 U	NA	3.9	0.74 U
ARSENIC	3 UJ	NA	13 J	NA	1 U	1 U
BARIUM	220	NA	150	NA	30	41
BERYLLIUM	1 U	NA	1.4	NA	0.65 J	0.3 U
CADMIUM	0.39 J	NA	0.37 UJ	NA	0.37 U	0.37 U
CHROMIUM	1 U	NA	8.4 J	NA	5	0.85 J
COBALT	73 J	NA	11 J	NA	1.9 U	25
COPPER	6.3 J	NA	13 J	NA	4.3 J	1.9 U
IRON	5800	NA	89800	NA	860	10100
LEAD	2.8	NA	2.9	NA	0.95 J	0.74 U
MANGANESE	3000 J	NA	2000 J	NA	53	1200
MERCURY	0.5 U	NA	0.17 U	NA	0.17 U	0.17 U
MOLYBDENUM	2.2 UJ	NA	2.2 U	NA	2.2 U	0.74 U
NICKEL	96 J	NA	17 J	NA	7.7	37
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	5.6 UJ	NA	3 J	NA	1.9 U	1.9 U
SILVER	2.2 UJ	NA	0.74 UJ	NA	0.74 U	0.74 U
THALLIUM	1 U	NA	0.3 U	NA	0.3 U	0.3 U
VANADIUM	2.2 J	NA	11 J	NA	11	0.74 U
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	0.06 U	0.06 U	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW69A MRC-MW-69A-050515 20150505	MRC-MW69B MRC-MW-69B-050515 20150505	MRC-MW70A MRC-MW-70A-062515 20150625	MRC-MW70B MRC-MW-70B-062515 20150625	MRC-MW71A MRC-MW-71A-041615 20150416	MRC-MW-71B-041615 20150416
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW71B		MRC-MW72B		MRC-MW73B	MRC-MW74A
SAMPLE ID	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115	MRC-MW-73B-041515	MRC-MW-74A-051115
SAMPLE DATE	20150416	20150416	20150415	20150511	20150415	20150511
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	1.25	1.3	1 U	NA	1 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	1 U	NA	1 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	1 U	NA	1 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.895	0.89 J	1.3	NA	1 U	0.26 U
1,1-DICHLOROETHANE	4.1	4.1	1 U	NA	1 U	0.28 U
1,1-DICHLOROETHENE	58.35	58.7	1 U	NA	1 U	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	2 U	NA	2 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	2 U	NA	2 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	7 U	NA	7 U	1.5 U
1,2-DIBROMOETHANE	0.28 U	0.28 U	1 U	NA	1 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	0.38 U	1 U	NA	1 U	0.38 U
1,2-DICHLOROETHANE	0.485	0.47 J	1 U	NA	1 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	0.24 U	1 U	NA	1 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	0.25 U	1 U	NA	1 U	0.33 J
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	1 U	NA	1 U	0.68 J
1,4-DIOXANE	58.9 R	58.9 UR	320 UR	NA	320 UR	58.9 UJ
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 U	10 U	NA	10 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	5 U	NA	5 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	5 U	NA	5 U	1.5 U
ACETONE	3.1 U	3.1 U	10 U	NA	10 U	3.1 U
BENZENE	0.23 U	0.23 U	1 U	NA	1 U	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	1 U	NA	1 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	0.27 U	1 U	NA	1 U	0.27 U
BROMOFORM	0.4 U	0.4 U	1 U	NA	1 U	0.4 U
BROMOMETHANE	0.39 U	0.39 U	0.47 U	NA	0.57 U	0.39 U
CARBON DISULFIDE	0.23 U	0.23 U	1 U	NA	1 UJ	0.23 U
CARBON TETRACHLORIDE	0.31 U	0.31 U	1 U	NA	1 U	0.31 U
CHLOROBENZENE	0.19 U	0.19 U	0.26 J	NA	0.27 J	0.19 U
CHLORODIBROMOMETHANE	0.45 U	0.45 U	1 U	NA	1 U	0.45 U
CHLOROETHANE	0.33 U	0.33 U	1 U	NA	1 U	0.33 U
CHLOROFORM	0.21 U	0.21 U	1 U	NA	1 U	0.21 U
CHLOROMETHANE	0.31 U	0.31 U	1 U	NA	1 U	0.31 U
CIS-1,2-DICHLOROETHENE	6.65	6.6	2.4	NA	3.5	5.9

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW71B		MRC-MW72B		MRC-MW73B	MRC-MW74A
SAMPLE ID	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115	MRC-MW-73B-041515	MRC-MW-74A-051115
SAMPLE DATE	20150416	20150416	20150415	20150511	20150415	20150511
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 UJ	1 UJ	NA	1 U	0.31 U
CYCLOHEXANE	0.29 U	0.29 U	1 U	NA	1 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	1 U	NA	1 UJ	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	1 U	NA	1 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	1 U	NA	1 U	0.22 U
M+P-XYLENES	0.52 U	0.52 U	2 U	NA	2 U	0.52 U
METHYL ACETATE	0.32 U	0.32 U	2 U	NA	2 U	0.32 U
METHYL CYCLOHEXANE	0.3 U	0.3 U	1 U	NA	1 UJ	0.3 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	1 U	NA	1 U	0.33 U
METHYLENE CHLORIDE	0.45 U	0.45 U	1 U	NA	1 U	0.5 J
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	1 U	NA	1 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	1 U	NA	1 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.76	0.76 J	0.66 U	NA	1 U	0.35 U
TOLUENE	0.23 U	0.23 U	1 U	NA	1 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	1 U	NA	1 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	1 U	NA	1 U	0.29 U
TRICHLOROETHENE	45	44.5	1790	NA	68.8	122
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	1 U	NA	1 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	1 U	NA	1	0.3 U
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	3.3 U	NA	NA	NA
ETHENE	NA	NA	2.4 U	NA	NA	NA
METHANE	NA	NA	1.5 U	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	19.35	19.4	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW71B		MRC-MW72B		MRC-MW73B	MRC-MW74A
SAMPLE ID	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115	MRC-MW-73B-041515	MRC-MW-74A-051115
SAMPLE DATE	20150416	20150416	20150415	20150511	20150415	20150511
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.74 U	NA	NA	NA	NA
ARSENIC	1 U	1 U	NA	NA	NA	NA
BARIUM	41	41	NA	NA	NA	NA
BERYLLIUM	0.3 U	0.3 U	NA	NA	NA	NA
CADMIUM	0.37 U	0.37 U	NA	NA	NA	NA
CHROMIUM	0.885	0.92 J	NA	NA	NA	NA
COBALT	24.5	24	NA	NA	NA	NA
COPPER	1.9 U	1.9 U	NA	NA	NA	NA
IRON	10050	10000	NA	NA	NA	NA
LEAD	0.74 U	0.74 U	NA	NA	NA	NA
MANGANESE	1200	1200	NA	NA	NA	NA
MERCURY	0.17 U	0.17 U	NA	NA	NA	NA
MOLYBDENUM	0.97 U	1.2 U	NA	NA	NA	NA
NICKEL	37	37	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	1.9 U	NA	NA	NA	NA
SILVER	0.74 U	0.74 U	NA	NA	NA	NA
THALLIUM	0.3 U	0.3 U	NA	NA	NA	NA
VANADIUM	0.74 U	0.74 U	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	0.15 J	NA	NA	0.14 J

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW71B		MRC-MW72B		MRC-MW73B	MRC-MW74A
SAMPLE ID	MRC-MW-71B-041615-AVG	MRC-MW-71B-041615-D	MRC-MW-72B-041515	MRC-MW-72B-051115	MRC-MW-73B-041515	MRC-MW-74A-051115
SAMPLE DATE	20150416	20150416	20150415	20150511	20150415	20150511
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	36	NA	NA	NA
AMMONIA-N	NA	NA	0.15 J	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	11.1	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	1.5	0.46 J	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	0.55	NA	NA	NA
NITRITE-N	NA	NA	0.2 U	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	3.9	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[(1)] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	1 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	1 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.43 J	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	106	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	1 U	0.28 U	1.7	18	0.28 U	2.4
1,1-DICHLOROETHENE	3.3	0.29 U	1.2	2.8	0.29 U	4.3
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	2 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	2 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	1 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	1 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	1 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	1 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.95 J	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	320 UJ	58.9 UR	58.9 UR	58.9 U	58.9 UR	58.9 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	10 U	1.8 UJ	1.8 UJ	1.8 U	1.8 UJ	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	5 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
ACETONE	10 U	22.1	3.1 U	3.1 U	3.1 U	3.1 U
BENZENE	1 U	0.23 U	0.23 U	14	0.23 U	1.7
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	1 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	1 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
BROMOFORM	1 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	1 U	0.58 U	0.51 U	0.59 U	0.42 U	0.39 UJ
CARBON DISULFIDE	1 U	0.23 U	0.23 U	0.23 UJ	0.23 U	0.23 UJ
CARBON TETRACHLORIDE	1 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	6.3	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	1 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	1 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	7	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
CHLOROMETHANE	1 U	0.39 J	0.32 J	0.31 U	0.34 J	0.31 U
CIS-1,2-DICHLOROETHENE	500	0.32 U	1.3	3.9	0.45 J	102

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[(1)] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
CIS-1,3-DICHLOROPROPENE	1 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 UJ
CYCLOHEXANE	1 U	0.77 J	0.29 U	0.73 J	0.29 U	0.61 J
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1 U	0.33 U	0.33 U	0.33 UJ	0.33 U	0.33 UJ
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	1 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	1 U	0.22 U	0.22 U	0.36 J	0.22 U	0.22 U
M+P-XYLENES	2 U	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U
METHYL ACETATE	2 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
METHYL CYCLOHEXANE	1 U	0.31 J	0.3 U	0.62 J	0.3 U	0.3 UJ
METHYL TERT-BUTYL ETHER	1 U	0.33 U	0.33 U	117	0.33 U	40.3
METHYLENE CHLORIDE	2.5	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	1 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	1 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 J
TOLUENE	1 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	2.6	0.26 U	0.26 U	0.26 U	0.26 U	4.7 J
TRANS-1,3-DICHLOROPROPENE	1 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	21800	0.33 U	10.6	8	5.9	284
TRICHLOROFLUOROMETHANE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	1 U	0.3 U	0.3 U	1.8	0.3 U	20
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[(1)] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
ARSENIC	NA	1.2 J	1 U	1.4 J	2.1 J	1.4 J
BARIUM	NA	98	120	580	100	190
BERYLLIUM	NA	12	1.5	29	0.3 U	1.3
CADMIUM	NA	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
CHROMIUM	NA	0.74 U	0.74 U	2.4	1.6 J	7.4
COBALT	NA	510	190	370	60	220
COPPER	NA	3.9 J	1.9 U	19	9	19
IRON	NA	20800	20100	78500	4000	51900
LEAD	NA	0.74 U	0.74 U	0.74 U	1.1 J	1.7 J
MANGANESE	NA	25300	7500	19500	1600	14000
MERCURY	NA	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
MOLYBDENUM	NA	0.74 U	0.74 U	0.74 U	2.7	0.74 U
NICKEL	NA	470	270	550	15	74
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	2.9 J	1.9 U	3.4 J	1.9 U	1.9 U
SILVER	NA	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
THALLIUM	NA	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
VANADIUM	NA	0.74 U	0.74 U	0.74 U	3.7	12
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	0.06 U	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW74B MRC-MW-74B-051315 20150513	MRC-MW76A MRC-MW-76A-042315 20150423	MRC-MW76B MRC-MW-76B-042315 20150423	MRC-MW77A[(1)] MRC-MW-77B-042115 20150421	MRC-MW78B MRC-MW-78B-042315 20150423	MRC-MW79B MRC-MW-79B-042115 20150421
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B		MRC-MW87A
SAMPLE ID	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG
SAMPLE DATE	20150429	20150429	20150422	20150422	20150513	20150513
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	NA	0.22 U	NA	0.22 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	NA	0.34 U	NA	0.34 U	1 U	1 U
1,1,2-TRICHLOROETHANE	NA	0.33 U	NA	0.33 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	NA	0.26 U	NA	0.26 U	1 U	1 U
1,1-DICHLOROETHANE	NA	1.5	NA	114	1 U	1 U
1,1-DICHLOROETHENE	NA	24.9	NA	480	1 U	1 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	0.93 U	NA	0.93 U	2 U	2 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	0.82 U	NA	0.82 U	2 U	2 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	NA	1.5 U	NA	1.5 U	7 U	7 U
1,2-DIBROMOETHANE	NA	0.28 U	NA	0.28 U	1 U	1 U
1,2-DICHLOROBENZENE	NA	0.38 U	NA	0.38 U	1 U	1 U
1,2-DICHLOROETHANE	NA	0.32 U	NA	0.32 U	1 U	1 U
1,2-DICHLOROPROPANE	NA	0.24 U	NA	0.24 U	1 U	1 U
1,3-DICHLOROBENZENE	NA	0.25 U	NA	0.25 U	1 U	1 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	0.27 U	NA	0.39 U	1 U	1 U
1,4-DIOXANE	NA	58.9 U	NA	58.9 UR	320 U	320 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	1.8 U	NA	1.8 U	10 U	10 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	NA	1.3 U	NA	1.3 U	5 U	5 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	NA	1.5 U	NA	1.5 U	5 U	5 U
ACETONE	NA	3.1 U	NA	3.1 U	10 U	10 U
BENZENE	NA	0.23 U	NA	4.6	1 U	1 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	NA	0.32 U	NA	0.32 U	1 U	1 U
BROMODICHLOROMETHANE	NA	0.27 U	NA	0.27 U	1 U	1 U
BROMOFORM	NA	0.4 U	NA	0.4 U	1 U	1 U
BROMOMETHANE	NA	0.39 U	NA	0.39 U	1 U	1 U
CARBON DISULFIDE	NA	0.23 U	NA	0.42 U	1 U	1 U
CARBON TETRACHLORIDE	NA	0.31 U	NA	0.31 U	1 U	1 U
CHLOROBENZENE	NA	0.19 U	NA	0.19 U	1 U	1 U
CHLORODIBROMOMETHANE	NA	0.45 U	NA	0.45 U	1 U	1 U
CHLOROETHANE	NA	0.33 U	NA	0.33 U	1 U	1 U
CHLOROFORM	NA	0.21 U	NA	0.21 U	1 U	1 U
CHLOROMETHANE	NA	0.31 U	NA	0.31 U	0.49 J	0.49 J
CIS-1,2-DICHLOROETHENE	NA	2.4	NA	10900	1 U	1 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B		MRC-MW87A
SAMPLE ID	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG
SAMPLE DATE	20150429	20150429	20150422	20150422	20150513	20150513
CIS-1,3-DICHLOROPROPENE	NA	0.31 UJ	NA	0.31 U	1 U	1 U
CYCLOHEXANE	NA	0.29 U	NA	0.48 J	1 U	1 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	NA	0.33 U	NA	0.33 U	1 U	1 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	NA	0.34 U	NA	0.58 J	1 U	1 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NA	0.22 U	NA	0.25 J	1 U	1 U
M+P-XYLENES	NA	0.52 U	NA	0.92 J	2 U	2 U
METHYL ACETATE	NA	0.32 U	NA	0.32 U	2 U	2 U
METHYL CYCLOHEXANE	NA	0.3 U	NA	0.3 U	1 U	1 U
METHYL TERT-BUTYL ETHER	NA	0.33 UJ	NA	0.33 U	1 U	1 U
METHYLENE CHLORIDE	NA	0.45 U	NA	0.45 U	1 U	1 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	0.33 UJ	NA	4	1 U	1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	NA	0.24 U	NA	0.24 U	1 U	1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	0.35 U	NA	0.45 J	1 U	1 U
TOLUENE	NA	0.23 U	NA	1	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	0.26 U	NA	122	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NA	0.29 U	NA	0.29 U	1 U	1 U
TRICHLOROETHENE	NA	61.7	NA	3010	1 U	1 U
TRICHLOROFLUOROMETHANE	NA	0.24 U	NA	0.24 U	1 U	1 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	NA	0.3 U	NA	147	1 U	1 U
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	0.59 J	NA	NA
ETHENE	NA	NA	NA	5.8	NA	NA
METHANE	NA	NA	NA	701	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	4.7	15.4	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B		MRC-MW87A
SAMPLE ID	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG
SAMPLE DATE	20150429	20150429	20150422	20150422	20150513	20150513
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	NA	0.74 U	0.74 U	NA	NA
ARSENIC	1 U	NA	3.4	1 U	NA	NA
BARIUM	28	NA	170	480	NA	NA
BERYLLIUM	0.58 J	NA	1.3	0.39 J	NA	NA
CADMIUM	0.37 U	NA	0.37 U	0.37 U	NA	NA
CHROMIUM	2 J	NA	0.8 J	3.1	NA	NA
COBALT	1.9 U	NA	67 J	25 J	NA	NA
COPPER	1.9 U	NA	2.5 J	3.6 J	NA	NA
IRON	23 U	NA	76800	66700	NA	NA
LEAD	0.74 U	NA	0.74 U	0.74 U	NA	NA
MANGANESE	14	NA	6400	3200	NA	NA
MERCURY	0.17 U	NA	0.17 U	0.17 U	NA	NA
MOLYBDENUM	0.74 U	NA	0.74 U	1.3 U	NA	NA
NICKEL	5.3 J	NA	50	26	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	NA	8.5	1.9 U	NA	NA
SILVER	0.74 U	NA	0.74 U	0.74 U	NA	NA
THALLIUM	0.3 U	NA	0.3 U	0.3 U	NA	NA
VANADIUM	0.74 U	NA	0.74 U	1.5 J	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW80A	MRC-MW80B	MRC-MW81A	MRC-MW81B		MRC-MW87A
SAMPLE ID	MRC-MW-80A-042915	MRC-MW-80B-042915	MRC-MW-81A-042215	MRC-MW-81B-042215	MRC-MW-87A-051315	MRC-MW-87A-051315-AVG
SAMPLE DATE	20150429	20150429	20150422	20150422	20150513	20150513
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	211	NA	NA
AMMONIA-N	NA	NA	NA	0.084 U	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	120	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	18.1	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	0.18 J	NA	NA
NITRITE-N	NA	NA	NA	0.044 U	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	0.011 J	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	1.6 J	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	456	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION		MRC-MW87B	MRC-MW88B		MRC-MW90B	MRC-MW91A
SAMPLE ID	MRC-MW-87A-051315-D	MRC-MW-87B-042215	MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215
SAMPLE DATE	20150513	20150422	20150429	20150501	20150518	20150422
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	1 U	0.22 U	0.22 U	0.22 U	0.22 U	NA
1,1,2,2-TETRACHLOROETHANE	1 U	0.34 U	0.34 U	0.34 U	0.34 U	NA
1,1,2-TRICHLOROETHANE	1 U	0.33 U	0.33 U	0.33 U	0.33 U	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	1 U	0.26 U	0.26 U	0.26 U	0.26 U	NA
1,1-DICHLOROETHANE	1 U	0.28 U	0.28 U	0.28 U	0.28 U	NA
1,1-DICHLOROETHENE	1 U	0.29 U	0.29 U	0.29 U	15.6	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	2 U	0.93 U	0.93 U	0.93 U	0.93 U	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	2 U	0.82 U	0.82 U	0.82 U	0.82 U	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	7 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
1,2-DIBROMOETHANE	1 U	0.28 U	0.28 U	0.28 U	0.28 U	NA
1,2-DICHLOROBENZENE	1 U	0.38 U	0.38 U	0.38 U	0.38 U	NA
1,2-DICHLOROETHANE	1 U	0.32 U	0.32 U	0.32 U	0.32 U	NA
1,2-DICHLOROPROPANE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	NA
1,3-DICHLOROBENZENE	1 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	1 U	0.27 U	0.27 U	0.27 U	0.27 U	NA
1,4-DIOXANE	320 U	58.9 UR	58.9 U	58.9 U	58.9 U	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	10 U	1.8 U	1.8 U	1.8 U	1.8 U	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	5 U	1.3 U	1.3 U	1.3 U	1.3 U	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
ACETONE	10 U	14.3	3.1 U	3.1 U	3.1 U	NA
BENZENE	1 U	0.23 U	0.23 U	0.23 U	0.23 U	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	1 U	0.32 U	0.32 U	0.32 U	0.32 U	NA
BROMODICHLOROMETHANE	1 U	0.27 U	0.27 U	0.27 U	0.27 U	NA
BROMOFORM	1 U	0.4 U	0.4 U	0.4 U	0.4 U	NA
BROMOMETHANE	1 U	0.56 U	0.47 U	0.45 U	0.39 U	NA
CARBON DISULFIDE	1 U	0.29 U	0.23 U	0.23 U	0.65 J	NA
CARBON TETRACHLORIDE	1 U	0.31 U	0.31 U	0.31 U	0.31 U	NA
CHLOROBENZENE	1 U	0.19 U	0.19 U	0.19 U	0.19 U	NA
CHLORODIBROMOMETHANE	1 U	0.45 U	0.45 U	0.45 U	0.45 U	NA
CHLOROETHANE	1 U	0.33 U	0.33 U	0.33 U	0.33 U	NA
CHLOROFORM	1 U	0.21 U	0.21 U	0.21 U	0.7 J	NA
CHLOROMETHANE	1 U	0.31 U	0.31 U	0.31 U	0.57 J	NA
CIS-1,2-DICHLOROETHENE	1 U	0.32 U	0.32 U	0.32 U	2.9	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION		MRC-MW87B	MRC-MW88B		MRC-MW90B	MRC-MW91A
SAMPLE ID	MRC-MW-87A-051315-D	MRC-MW-87B-042215	MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215
SAMPLE DATE	20150513	20150422	20150429	20150501	20150518	20150422
CIS-1,3-DICHLOROPROPENE	1 U	0.31 U	0.31 UJ	0.31 U	0.31 U	NA
CYCLOHEXANE	1 U	0.29 U	0.29 U	0.29 U	0.29 U	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1 U	0.33 U	0.33 U	0.33 U	0.33 U	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	1 U	0.34 U	0.34 U	0.34 U	0.34 U	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	1 U	0.22 U	0.22 U	0.22 U	0.22 U	NA
M+P-XYLENES	2 U	0.52 U	0.52 U	0.52 U	0.52 U	NA
METHYL ACETATE	2 U	0.32 U	0.32 U	0.32 U	0.32 U	NA
METHYL CYCLOHEXANE	1 U	0.3 U	0.3 U	0.3 U	0.3 U	NA
METHYL TERT-BUTYL ETHER	1 U	0.33 U	0.33 UJ	0.33 U	0.33 U	NA
METHYLENE CHLORIDE	1 U	0.45 U	0.45 U	0.45 U	0.45 U	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	1 U	0.33 U	0.33 UJ	0.33 U	0.33 U	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	1 U	0.35 U	0.35 U	0.35 U	0.35 U	NA
TOLUENE	1 U	0.23 U	0.23 U	0.23 U	0.23 U	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1 U	0.26 U	0.26 U	0.26 U	0.26 U	NA
TRANS-1,3-DICHLOROPROPENE	1 U	0.29 U	0.29 U	0.29 U	0.29 U	NA
TRICHLOROETHENE	1 U	2.3	1.2	0.66 J	102	NA
TRICHLOROFLUOROMETHANE	1 U	0.24 U	0.24 U	0.24 U	0.24 U	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	1 U	0.3 U	0.3 U	0.3 U	0.3 U	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	5.4	4.1

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION		MRC-MW87B	MRC-MW88B		MRC-MW90B	MRC-MW91A
SAMPLE ID	MRC-MW-87A-051315-D	MRC-MW-87B-042215	MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215
SAMPLE DATE	20150513	20150422	20150429	20150501	20150518	20150422
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	1.4 J	NA	NA	NA	NA
ARSENIC	NA	1.2 J	NA	NA	NA	NA
BARIUM	NA	67	NA	NA	NA	NA
BERYLLIUM	NA	0.51 J	NA	NA	NA	NA
CADMIUM	NA	0.37 U	NA	NA	NA	NA
CHROMIUM	NA	6	NA	NA	NA	NA
COBALT	NA	1.9 J	NA	NA	NA	NA
COPPER	NA	6.2	NA	NA	NA	NA
IRON	NA	4300	NA	NA	NA	NA
LEAD	NA	1.2 J	NA	NA	NA	NA
MANGANESE	NA	86	NA	NA	NA	NA
MERCURY	NA	0.17 U	NA	NA	NA	NA
MOLYBDENUM	NA	10	NA	NA	NA	NA
NICKEL	NA	5.5 J	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	1.9 U	NA	NA	NA	NA
SILVER	NA	0.74 U	NA	NA	NA	NA
THALLIUM	NA	0.3 U	NA	NA	NA	NA
VANADIUM	NA	5.1	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	0.62	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION		MRC-MW87B	MRC-MW88B		MRC-MW90B	MRC-MW91A
SAMPLE ID	MRC-MW-87A-051315-D	MRC-MW-87B-042215	MRC-MW-88B-042915	MRC-MW-88B-050115	MRC-MW-90B-051815	MRC-MW-91A-042215
SAMPLE DATE	20150513	20150422	20150429	20150501	20150518	20150422
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW92C MRC-MW-92C-042315 20150423	MRC-MW93A MRC-MW-93A-051415 20150514	MRC-MW94B MRC-MW-94B-043015 20150430	MRC-MW95B MRC-MW-95B-043015 20150430	MRC-MW96A MRC-MW-96A-051115 20150511	MRC-MW96B MRC-MW-96B-051115 20150511
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,1-DICHLOROETHENE	0.29 U	0.29 U	0.29 U	0.29 U	96.5 J	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	58.9 UR	58.9 U	58.9 U	58.9 U	58.9 UJ	58.9 UJ
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 UJ	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
ACETONE	3.1 U	4.4 J	5.6 J	3.1 U	3.1 U	3.1 U
BENZENE	0.23 U	0.23 U	0.23 U	0.23 U	0.98 J	646
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
BROMOFORM	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.57 U	0.4 U	0.61 J	0.59 J	0.39 U	0.39 U
CARBON DISULFIDE	0.23 U	0.25 U	0.23 U	0.23 U	0.23 U	0.27 J
CARBON TETRACHLORIDE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
CHLOROMETHANE	0.33 J	0.39 J	0.32 J	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.79 J	2.1	0.32 U	0.32 U	47400	8.8

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW92C MRC-MW-92C-042315 20150423	MRC-MW93A MRC-MW-93A-051415 20150514	MRC-MW94B MRC-MW-94B-043015 20150430	MRC-MW95B MRC-MW-95B-043015 20150430	MRC-MW96A MRC-MW-96A-051115 20150511	MRC-MW96B MRC-MW-96B-051115 20150511
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	13.8
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	0.34 U	0.34 U	1.1 J	10.6
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	13.2
M+P-XYLENES	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U	60.4
METHYL ACETATE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
METHYL CYCLOHEXANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	35.2
METHYLENE CHLORIDE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	103
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
TOLUENE	0.23 U	0.23 U	0.23 U	0.23 U	6.6 J	2
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	0.26 U	0.26 U	104 J	1.6
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	1	2.9	0.33 U	2.7	3870	18.5
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	0.3 U	0.3 U	57.8 J	0.73 J
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	4.3	1.1

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW92C MRC-MW-92C-042315 20150423	MRC-MW93A MRC-MW-93A-051415 20150514	MRC-MW94B MRC-MW-94B-043015 20150430	MRC-MW95B MRC-MW-95B-043015 20150430	MRC-MW96A MRC-MW-96A-051115 20150511	MRC-MW96B MRC-MW-96B-051115 20150511
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	1.2 J	NA	NA	0.74 U	0.74 U
ARSENIC	1 U	41	NA	NA	1 U	1.4 J
BARIUM	150	1300	NA	NA	270	670
BERYLLIUM	0.32 J	74	NA	NA	14	9.8
CADMIUM	0.37 U	5.3	NA	NA	0.42 J	2.4
CHROMIUM	1.5 J	180	NA	NA	1.4 J	1.8 J
COBALT	36	5300	NA	NA	510	1100
COPPER	1.9 U	300	NA	NA	12	67
IRON	24900	236000	NA	NA	17100	180
LEAD	0.74 U	86	NA	NA	0.89 J	2.1 J
MANGANESE	1300	11500	NA	NA	4300	3300
MERCURY	0.17 U	0.17 U	NA	NA	0.17 U	0.17 U
MOLYBDENUM	1.7 J	15	NA	NA	0.74 U	0.74 U
NICKEL	28	5600	NA	NA	410	2100
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	120	NA	NA	1.9 U	3.7 J
SILVER	0.74 U	0.74 U	NA	NA	0.74 U	0.74 U
THALLIUM	0.3 U	0.82 J	NA	NA	0.3 U	0.3 U
VANADIUM	0.74 U	130	NA	NA	0.74 U	0.74 U
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	0.06 U	3.6

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW92C MRC-MW-92C-042315 20150423	MRC-MW93A MRC-MW-93A-051415 20150514	MRC-MW94B MRC-MW-94B-043015 20150430	MRC-MW95B MRC-MW-95B-043015 20150430	MRC-MW96A MRC-MW-96A-051115 20150511	MRC-MW96B MRC-MW-96B-051115 20150511
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE	20150518	20150518	20150518	20150518	20150506	20150506
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	NA	41.7	0.66 J	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	NA	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	NA	1.8	0.33 U	0.45 J
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	NA	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	3.8	3.8	NA	137	5.4	25.4
1,1-DICHLOROETHENE	6.3	6.3	NA	345	3.9	89.6
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	NA	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	NA	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	NA	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	0.28 U	0.28 U	NA	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	0.38 U	NA	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	0.24 U	NA	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	0.25 U	NA	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	NA	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	58.9 U	58.9 U	NA	121 J	58.9 UJ	60.6 J
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 U	NA	1.8 U	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	NA	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	NA	1.5 U	1.5 U	1.5 U
ACETONE	3.1 U	3.1 U	NA	3.1 U	3.1 U	3.1 U
BENZENE	0.23 U	0.23 U	NA	4.2	0.23 U	0.24 J
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	0.27 U	NA	0.27 U	0.27 U	0.27 U
BROMOFORM	0.4 U	0.4 U	NA	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.39 U	0.39 U	NA	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	0.23 U	0.23 U	NA	0.23 U	0.23 U	0.23 U
CARBON TETRACHLORIDE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	0.19 U	0.19 U	NA	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	0.45 U	0.45 U	NA	0.45 U	0.45 U	0.45 U
CHLOROETHANE	0.33 U	0.33 U	NA	40.1	0.33 U	0.33 U
CHLOROFORM	0.21 U	0.21 U	NA	0.99 J	0.21 U	0.48 J
CHLOROMETHANE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	1.2	1.2	NA	31.5	2.3	40.7

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE	20150518	20150518	20150518	20150518	20150506	20150506
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	0.29 U	0.29 U	NA	0.29 U	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	NA	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	NA	0.46 J	0.22 U	0.22 U
M+P-XYLENES	0.52 U	0.52 U	NA	0.52 U	0.52 U	0.52 U
METHYL ACETATE	0.32 U	0.32 U	NA	0.32 U	0.32 U	0.32 U
METHYL CYCLOHEXANE	0.3 U	0.3 U	NA	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	0.45 U	0.45 U	NA	9.1	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	NA	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.51 J	0.51 J	NA	6.1	0.35 U	0.9 J
TOLUENE	0.23 U	0.23 U	NA	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	NA	0.26 U	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	NA	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	9.1	9.1	NA	554	13.8	245
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	NA	0.45 J	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	NA	1.6	0.3 U	0.44 J
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	3.8	3.8	NA	138	3.6	69.4

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE	20150518	20150518	20150518	20150518	20150506	20150506
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	0.74 U	0.74 U	0.74 U	NA	0.74 U
ARSENIC	1 U	1 U	1 U	1 U	NA	1 U
BARIUM	45	45.5	46	41	NA	72
BERYLLIUM	0.3 U	0.3 U	0.3 U	8.4	NA	0.48 J
CADMIUM	0.37 U	0.37 U	0.37 U	0.37 U	NA	0.37 U
CHROMIUM	6.1	6.3	6.5	0.74 U	NA	0.74 U
COBALT	1.9 U	1.9 U	1.9 U	87	NA	53
COPPER	1.9 U	1.9 U	1.9 U	1.9 U	NA	1.9 U
IRON	330	335	340	18500	NA	28300
LEAD	0.74 U	0.74 U	0.74 U	0.74 U	NA	0.74 U
MANGANESE	28	32.5	37	2700	NA	1600
MERCURY	0.17 U	0.17 U	0.17 U	0.17 U	NA	NA
MOLYBDENUM	0.74 U	0.74 U	0.74 U	0.74 U	NA	0.74 U
NICKEL	1.9 U	1.9 U	1.9 U	130	NA	86
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	1.9 U	1.9 U	1.9 U	NA	1.9 U
SILVER	0.74 U	0.74 U	0.74 U	0.74 U	NA	0.74 U
THALLIUM	0.3 U	0.3 U	0.3 U	0.3 U	NA	0.3 U
VANADIUM	0.74 U	0.58	0.79 J	0.74 U	NA	0.8 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW98A			MRC-MW98B	MRC-MW100A	MRC-MW100B
SAMPLE ID	MRC-MW-98A-051815	MRC-MW-98A-051815-AVG	MRC-MW-98A-051815-D	MRC-MW-98B-051815	MRC-MW-100A-050615	MRC-MW-100B-050615
SAMPLE DATE	20150518	20150518	20150518	20150518	20150506	20150506
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	1 U	1 U	NA	NA
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	1 U	1 U	NA	NA
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	1 U	1 U	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	1 U	1 U	NA	NA
1,1-DICHLOROETHANE	0.82 J	5.6	1 U	1 U	NA	NA
1,1-DICHLOROETHENE	1	1.8	1 U	2.2	NA	NA
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	2 U	2 U	NA	NA
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	2 U	2 U	NA	NA
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	7 U	7 U	NA	NA
1,2-DIBROMOETHANE	0.28 U	0.28 U	1 U	1 U	NA	NA
1,2-DICHLOROBENZENE	0.38 U	0.38 U	1 U	1 U	NA	NA
1,2-DICHLOROETHANE	0.32 U	0.32 U	1 U	1 U	NA	NA
1,2-DICHLOROPROPANE	0.24 U	0.24 U	1 U	1 U	NA	NA
1,3-DICHLOROBENZENE	0.25 U	0.25 U	1 U	1 U	NA	NA
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	1 U	1 U	NA	NA
1,4-DIOXANE	58.9 U	58.9 U	320 UR	320 UR	NA	NA
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 U	10 U	10 U	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	5 U	5 U	NA	NA
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	5 U	5 U	NA	NA
ACETONE	3.1 U	4.8 J	10 U	10 U	NA	NA
BENZENE	0.23 U	0.23 U	0.42 J	0.38 J	NA	NA
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	1 U	1 U	NA	NA
BROMODICHLOROMETHANE	0.27 U	0.27 U	1 U	1 U	NA	NA
BROMOFORM	0.4 U	0.4 U	1 U	1 U	NA	NA
BROMOMETHANE	0.7 U	0.62 U	0.6 U	0.56 U	NA	NA
CARBON DISULFIDE	0.23 U	0.23 U	1 UJ	1 UJ	NA	NA
CARBON TETRACHLORIDE	0.31 U	0.31 U	1 U	1 U	NA	NA
CHLOROBENZENE	0.19 U	0.19 U	1 U	1 U	NA	NA
CHLORODIBROMOMETHANE	0.45 U	0.45 U	1 U	1 U	NA	NA
CHLOROETHANE	0.33 U	7	1 U	1 U	NA	NA
CHLOROFORM	0.21 U	0.21 U	1 U	1 U	NA	NA
CHLOROMETHANE	0.31 U	0.33 J	1 U	1 U	NA	NA
CIS-1,2-DICHLOROETHENE	39.6	2	2.3	482	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414
CIS-1,3-DICHLOROPROPENE	0.31 UJ	0.31 U	1 U	1 U	NA	NA
CYCLOHEXANE	0.29 U	0.29 U	1.2	1 U	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	1 UJ	1 UJ	NA	NA
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	1 U	1 U	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	1 U	1 U	NA	NA
M+P-XYLENES	0.52 U	0.52 U	2 U	2 U	NA	NA
METHYL ACETATE	0.32 U	0.32 U	2 U	2 U	NA	NA
METHYL CYCLOHEXANE	0.3 U	0.3 U	0.63 J	1 UJ	NA	NA
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	1 U	1 U	NA	NA
METHYLENE CHLORIDE	0.45 U	0.45 U	1 U	1 U	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	1 UJ	0.33 U	1 U	1 U	NA	NA
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	1 U	1 U	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	0.35 U	1 U	1 U	NA	NA
TOLUENE	0.23 U	0.23 U	1 U	1 U	NA	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1.7	0.26 U	1 U	6 J	NA	NA
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	1 U	1 U	NA	NA
TRICHLOROETHENE	7.1	2	0.42 J	123	NA	NA
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	1 U	1 U	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	1.9	0.3 U	0.38 J	0.39 J	NA	NA
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1221	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1232	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1242	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1248	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1254	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1260	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1262	NA	NA	NA	NA	0.5 UJ	0.5 UJ
AROCLOR-1268	NA	NA	NA	NA	0.5 UJ	0.5 UJ
TOTAL AROCLOR	NA	NA	NA	NA	0.5 UJ	0.5 UJ
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	NA	NA	2.2 U	NA	NA
ARSENIC	NA	NA	NA	3 U	NA	NA
BARIUM	NA	NA	NA	40	NA	NA
BERYLLIUM	NA	NA	NA	15	NA	NA
CADMIUM	NA	NA	NA	1.1 J	NA	NA
CHROMIUM	NA	NA	NA	0.91 J	NA	NA
COBALT	NA	NA	NA	410	NA	NA
COPPER	NA	NA	NA	3.2 J	NA	NA
IRON	NA	NA	NA	63 U	NA	NA
LEAD	NA	NA	NA	2.2 U	NA	NA
MANGANESE	NA	NA	NA	350	NA	NA
MERCURY	NA	NA	NA	0.5 U	NA	NA
MOLYBDENUM	NA	NA	NA	2.2 U	NA	NA
NICKEL	NA	NA	NA	580	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	5.6 U	NA	NA
SILVER	NA	NA	NA	2.2 U	NA	NA
THALLIUM	NA	NA	NA	1 U	NA	NA
VANADIUM	NA	NA	NA	2.2 U	NA	NA
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW101A MRC-MW-101A-042115 20150421	MRC-MW101B MRC-MW-101B-042115 20150421	MRC-MW102A MRC-MW-102A-042015 20150420	MRC-MW102B MRC-MW-102B-042015 20150420	MRC-MW103A MRC-MW-103A-041415 20150414	MRC-MW103B MRC-MW-103B-041415 20150414
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	NA	0.22 U	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	NA	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	NA	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	0.28 U	0.28 U	NA	0.33 J	0.28 U	0.28 U
1,1-DICHLOROETHENE	0.29 U	0.29 U	NA	2.2	0.29 U	1.7
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U	NA	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U	NA	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	NA	1.5 UJ	1.5 UJ	1.5 U
1,2-DIBROMOETHANE	0.28 U	0.28 U	NA	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	0.38 U	NA	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	0.24 U	NA	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	0.25 U	NA	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U	NA	0.27 U	0.27 U	0.27 U
1,4-DIOXANE	58.9 U	58.9 U	NA	58.9 UJ	58.9 UJ	58.9 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 UJ	1.8 UJ	NA	1.8 UJ	1.8 UJ	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	NA	1.3 UJ	1.3 UJ	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	NA	1.5 UJ	1.5 UJ	1.5 U
ACETONE	3.1 U	3.1 U	NA	3.1 UJ	5.1 U	8 J
BENZENE	0.23 U	0.23 U	NA	0.23 U	0.23 U	0.23 U
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	NA	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	0.27 U	NA	0.27 U	0.27 U	0.27 U
BROMOFORM	0.4 U	0.4 U	NA	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.47 U	0.48 U	NA	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	0.23 U	0.23 U	NA	0.95 J	0.23 U	0.35 U
CARBON TETRACHLORIDE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	0.19 U	0.19 U	NA	0.19 U	0.19 U	0.19 U
CHLORODIBROMOMETHANE	0.45 U	0.45 U	NA	0.45 U	0.45 U	0.45 U
CHLOROETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
CHLOROFORM	0.21 U	0.21 U	NA	0.21 U	0.21 U	0.21 U
CHLOROMETHANE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.32 U	0.32 U	NA	0.91 J	0.32 U	45.4

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	NA	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	0.29 U	0.29 U	NA	0.29 U	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	NA	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	NA	0.22 U	0.22 U	0.22 U
M+P-XYLENES	0.52 U	0.52 U	NA	0.52 U	0.52 U	0.52 U
METHYL ACETATE	0.32 U	0.32 U	NA	0.32 UJ	0.32 UJ	0.32 U
METHYL CYCLOHEXANE	0.3 U	0.3 U	NA	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	0.45 U	0.45 U	NA	0.45 U	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	NA	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	NA	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	0.35 U	NA	0.35 U	0.35 U	0.35 U
TOLUENE	0.23 U	0.23 U	NA	0.23 U	0.23 U	0.4 J
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U	NA	0.26 U	0.26 U	1.2
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	NA	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	0.33 U	0.33 U	NA	12.8	0.33 U	0.33 U
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U	NA	0.24 U	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U	NA	0.3 U	0.3 U	34
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	NA	0.74 U	0.74 U	NA	1.7 J	0.74 U
ARSENIC	NA	1.6 J	1 U	NA	1.2 J	4.4
BARIUM	NA	58	85	NA	52	190
BERYLLIUM	NA	8.7	3.1	NA	0.3 U	0.67 J
CADMIUM	NA	0.49 J	0.43 J	NA	0.82 J	0.37 U
CHROMIUM	NA	0.89 J	0.74 U	NA	5.9 J	12
COBALT	NA	81	34	NA	11 J	120
COPPER	NA	8.4	8.5	NA	8.6 J	14
IRON	NA	92 U	24 J	NA	2200	67900
LEAD	NA	0.74 U	0.74 U	NA	15	5.9
MANGANESE	NA	530	100	NA	750 J	1400
MERCURY	NA	0.17 U	0.17 U	NA	0.23 J	0.17 U
MOLYBDENUM	NA	0.78 U	0.74 U	NA	1 U	0.79 J
NICKEL	NA	89	29	NA	17 J	73
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	NA	5.6 J	4 J	NA	1.9 UJ	1.9 U
SILVER	NA	0.74 U	0.74 U	NA	0.74 UJ	0.74 U
THALLIUM	NA	0.3 U	0.3 U	NA	0.3 U	0.3 U
VANADIUM	NA	0.74 U	0.74 U	NA	6.3 J	26
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	NA	NA	NA	NA	NA	0.06 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW104A MRC-MW-104A-042815 20150428	MRC-MW104B MRC-MW-104B-042815 20150428	MRC-MW105A MRC-MW-105A-042715 20150427	MRC-MW106B/C MRC-MW-106B/C-062515 20150625	MRC-MW107B/C MRC-MW-107B/C-062515 20150625	MRC-MW109A MRC-MW-109A-051815 20150518
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518	MRC-MW111B MRC-MW-111B-051815 20150518	MRC-MW112A MRC-MW-112A-042815 20150428
VOLATILES (UG/L)						
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	1 U	1 U	0.22 U	1.7	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	1 U	1 U	0.34 U	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	1 U	1 U	0.33 U	2.4	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	1 U	1 U	0.26 U	0.26 U	0.26 U
1,1-DICHLOROETHANE	0.28 U	1.1	1 U	0.28 U	39.3	0.28 U
1,1-DICHLOROETHENE	2.2	1.1	0.75 J	0.29 U	463	0.29 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	2 U	2 U	0.93 U	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	2 U	2 U	0.82 U	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	7 U	7 U	1.5 U	1.5 U	1.5 U
1,2-DIBROMOETHANE	0.28 U	1 U	1 U	0.28 U	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	1 U	1 U	0.38 U	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.32 U	1 U	1 U	0.32 U	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	1 U	1 U	0.24 U	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	1 U	1 U	0.25 U	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	0.27 U	1 U	1 U	0.27 U	0.27 U	0.36 J
1,4-DIOXANE	58.9 U	320 UR	320 UR	58.9 U	140 J	58.9 U
2,2-DICHLOROPROPANE	NA	NA	NA	NA	NA	NA
2-BUTANONE	1.8 U	10 U	10 U	1.8 U	1.8 U	1.8 UJ
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
2-HEXANONE	1.3 U	5 U	5 U	1.3 U	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	5 U	5 U	1.5 U	1.5 U	1.5 U
ACETONE	20.9	10 U	3.5 J	3.1 U	3.1 U	3.1 U
BENZENE	123	2.1	47.4	0.23 U	7.9	0.31 J
BROMOBENZENE	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	1 U	1 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	1 U	1 U	0.27 U	0.27 U	0.27 U
BROMOFORM	0.4 U	1 U	1 U	0.4 U	0.4 U	0.4 U
BROMOMETHANE	0.39 U	1 UJ	0.59 U	0.39 U	0.39 U	0.43 U
CARBON DISULFIDE	0.23 U	1 UJ	0.48 J	0.29 J	0.23 U	0.23 U
CARBON TETRACHLORIDE	0.31 U	1 U	1 U	0.31 U	0.31 U	0.31 U
CHLOROBENZENE	0.19 U	1 U	1 U	0.2 U	0.19 U	2.2
CHLORODIBROMOMETHANE	0.45 U	1 U	1 U	0.45 U	0.45 U	0.45 U
CHLOROETHANE	0.33 U	1 U	1 U	0.33 U	0.33 U	0.33 U
CHLOROFORM	0.21 U	1 U	1 U	0.21 U	0.95 J	0.21 U
CHLOROMETHANE	0.31 U	1 U	0.34 J	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	302	8.3	5.8	0.32 U	28.4	1.8

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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518	MRC-MW111B MRC-MW-111B-051815 20150518	MRC-MW112A MRC-MW-112A-042815 20150428
CIS-1,3-DICHLOROPROPENE	0.31 U	1 U	1 U	0.31 U	0.31 U	0.31 U
CYCLOHEXANE	1.9	1 U	0.85 J	0.29 U	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	1 UJ	1 UJ	0.33 U	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	1 U	2.2	0.34 U	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	1.9	1 U	1 U	0.22 U	0.22 U	0.22 U
M+P-XYLENES	0.64 J	2 U	2.2	0.52 U	0.52 U	0.52 U
METHYL ACETATE	0.32 U	2 U	2 U	0.32 U	0.32 U	0.32 U
METHYL CYCLOHEXANE	0.3 U	1 UJ	1 UJ	0.3 U	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	11.2	1 U	2.8	0.33 U	0.33 U	0.33 U
METHYLENE CHLORIDE	0.45 U	1 U	1 U	0.45 U	0.45 U	0.45 U
NAPHTHALENE	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA	NA	NA
O-XYLENE	6.5	1 U	2.3	0.33 U	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
STYRENE	0.24 U	1 U	1 U	0.24 U	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.35 U	1 U	1 U	0.35 U	4.8	0.35 U
TOLUENE	0.33 J	1 U	1 U	0.23 U	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	28.8	0.41 J	1 U	0.26 U	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	1 U	1 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	87.2	33	38.8	0.38 J	1270	2.5
TRICHLOROFLUOROMETHANE	0.24 U	1 U	1 U	0.24 U	0.24 U	0.24 U
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	19.1	0.57 J	1 U	0.3 U	1.2	1.3
VOLATILE GASES (UG/L)						
ETHANE	NA	NA	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA	NA	NA
METHANE	NA	NA	NA	NA	NA	NA
SEMIVOLATILES (UG/L)						
1,4-DIOXANE	NA	2.8	3.8	0.75	182	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
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LOCATION SAMPLE ID SAMPLE DATE	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518	MRC-MW111B MRC-MW-111B-051815 20150518	MRC-MW112A MRC-MW-112A-042815 20150428
PCB AROCLORS (UG/L)						
AROCLOR-1016	NA	NA	NA	NA	NA	NA
AROCLOR-1221	NA	NA	NA	NA	NA	NA
AROCLOR-1232	NA	NA	NA	NA	NA	NA
AROCLOR-1242	NA	NA	NA	NA	NA	NA
AROCLOR-1248	NA	NA	NA	NA	NA	NA
AROCLOR-1254	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA
AROCLOR-1262	NA	NA	NA	NA	NA	NA
AROCLOR-1268	NA	NA	NA	NA	NA	NA
TOTAL AROCLOR	NA	NA	NA	NA	NA	NA
PCB HOMOLOGS (UG/L)						
DECACHLOROBIPHENYL	NA	NA	NA	NA	NA	NA
DICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
HEXACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
MONOCHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
NONACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
OCTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
PENTACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
TRICHLOROBIPHENYLS	NA	NA	NA	NA	NA	NA
METALS (UG/L)						
ANTIMONY	0.74 U	2.2 U	0.78 J	NA	0.74 U	0.74 U
ARSENIC	1 U	3 U	1.2 J	NA	3.8	1 U
BARIUM	390	1200	280	NA	90	120
BERYLLIUM	12	10	1 U	NA	0.46 J	9.1
CADMIUM	1.2	0.99 J	1.1 U	NA	0.37 U	0.37 U
CHROMIUM	1.2 J	1.7 J	4	NA	0.74 U	0.92 J
COBALT	970	1100	100	NA	63	74
COPPER	30	3.1 J	10	NA	1.9 U	1.9 U
IRON	390	30400	1500	NA	40100	10800
LEAD	1.8 J	2.2 U	2.2 J	NA	0.74 U	0.74 U
MANGANESE	3400	23100	530	NA	1200	280
MERCURY	0.17 U	0.5 U	0.5 U	NA	0.17 U	0.17 U
MOLYBDENUM	0.74 U	2.2 U	2.7 U	NA	0.74 U	0.74 U
NICKEL	1200	690	96	NA	110	99
POTASSIUM	NA	NA	NA	NA	NA	NA
SELENIUM	1.9 U	5.6 U	5.6 U	NA	1.9 U	1.9 U
SILVER	0.74 U	2.2 U	2.2 U	NA	0.74 U	0.74 U
THALLIUM	0.3 U	1 U	1 U	NA	0.3 U	0.3 U
VANADIUM	1.1 J	0.97 J	3.8	NA	0.74 U	1.7 J
ZINC	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)						
PERCHLORATE	0.88	0.8 J	1.6 J	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW109B MRC-MW-109B-051415 20150514	MRC-MW110A MRC-MW-110A-041715 20150417	MRC-MW110B MRC-MW-110B-041715 20150417	MRC-MW111A MRC-MW-111A-051815 20150518	MRC-MW111B MRC-MW-111B-051815 20150518	MRC-MW112A MRC-MW-112A-042815 20150428
MISCELLANEOUS PARAMETERS (MG/L)						
ALKALINITY	NA	NA	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW113A			MRC-MW114A
SAMPLE ID	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415
SAMPLE DATE	20150427	20150427	20150427	20150414
VOLATILES (UG/L)				
1,1,1,2-TETRACHLOROETHANE	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U	0.22 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U	0.34 U	1 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U	0.33 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U	0.26 U	1 U
1,1-DICHLOROETHANE	1.8	1.7	1.6	1 U
1,1-DICHLOROETHENE	0.36 J	0.33	0.3 J	1 U
1,1-DICHLOROPROPENE	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	43	43.15	43.3	97
1,2,3-TRICHLOROPROPANE	NA	NA	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	131	132	133	260
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U	1.5 U	7 U
1,2-DIBROMOETHANE	0.28 U	0.28 U	0.28 U	1 U
1,2-DICHLOROBENZENE	13.8	13.65	13.5	17.4
1,2-DICHLOROETHANE	1.2	1.15	1.1	903
1,2-DICHLOROPROPANE	0.24 U	0.24 U	0.24 U	6.4
1,3-DICHLOROBENZENE	17.5	17.45	17.4	4.9
1,3-DICHLOROPROPANE	NA	NA	NA	NA
1,4-DICHLOROBENZENE	37.7	37.6	37.5	49.2
1,4-DIOXANE	58.9 U	58.9 U	58.9 U	320 UR
2,2-DICHLOROPROPANE	NA	NA	NA	NA
2-BUTANONE	1.8 U	1.8 U	1.8 U	10 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA
2-CHLOROTOLUENE	NA	NA	NA	NA
2-HEXANONE	1.3 U	1.3 U	1.3 U	5 U
4-CHLOROTOLUENE	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	NA	NA	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U	1.5 U	5 U
ACETONE	3.1 U	3.1 U	3.1 U	10 U
BENZENE	0.48 J	0.47	0.46 J	6
BROMOBENZENE	NA	NA	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U	0.32 U	1 U
BROMODICHLOROMETHANE	0.27 U	0.27 U	0.27 U	1 U
BROMOFORM	0.4 U	0.4 U	0.4 U	1 U
BROMOMETHANE	0.51 U	0.55 U	0.59 U	0.43 U
CARBON DISULFIDE	0.23 U	0.23 U	0.23 U	0.82 J
CARBON TETRACHLORIDE	0.95 J	0.905	0.86 J	1 U
CHLOROBENZENE	33	32.55	32.1	366
CHLORODIBROMOMETHANE	0.45 U	0.45 U	0.45 U	1 U
CHLOROETHANE	0.33 U	0.33 U	0.33 U	1 U
CHLOROFORM	1.1	1.035	0.97 J	1 U
CHLOROMETHANE	0.31 U	0.31 U	0.31 U	1 U
CIS-1,2-DICHLOROETHENE	9.5	8.95	8.4	0.7 J

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW113A			MRC-MW114A
SAMPLE ID	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415
SAMPLE DATE	20150427	20150427	20150427	20150414
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U	0.31 U	1 U
CYCLOHEXANE	0.29 U	0.29 U	0.29 U	1 U
DIBROMOMETHANE	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U	0.33 U	1 U
DIISOPROPYL ETHER	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA	NA	NA
ETHYLBENZENE	0.34 U	0.34 U	0.34 U	1 U
HEXACHLOROBUTADIENE	NA	NA	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U	0.22 U	1 U
M+P-XYLENES	0.52 U	0.52 U	0.52 U	2 U
METHYL ACETATE	0.32 U	0.32 U	0.32 U	2 U
METHYL CYCLOHEXANE	0.3 U	0.3 U	0.3 U	1 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U	0.33 U	1 U
METHYLENE CHLORIDE	0.45 U	0.45 U	0.45 U	1 U
NAPHTHALENE	NA	NA	NA	NA
N-BUTYLBENZENE	NA	NA	NA	NA
N-PROPYLBENZENE	NA	NA	NA	NA
O-XYLENE	0.33 U	0.33 U	0.33 U	1 U
SEC-BUTYLBENZENE	NA	NA	NA	NA
STYRENE	0.24 U	0.24 U	0.24 U	1 U
TERT-AMYL METHYL ETHER	NA	NA	NA	NA
TERT-AMYL METHYL ETHER	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA	NA	NA
TETRACHLOROETHENE	45.7	45.25	44.8	3.3
TOLUENE	0.23 U	0.23 U	0.23 U	1 U
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA
TOTAL XYLENES	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.38 J	0.37	0.36 J	1 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U	0.29 U	1 U
TRICHLOROETHENE	23.5	22.8	22.1	4.7
TRICHLOROFLUOROMETHANE	1010	985.5	961	187
VINYL ACETATE	NA	NA	NA	NA
VINYL CHLORIDE	0.34 J	0.245	0.3 U	3.5
VOLATILE GASES (UG/L)				
ETHANE	NA	NA	NA	NA
ETHENE	NA	NA	NA	NA
METHANE	NA	NA	NA	NA
SEMIVOLATILES (UG/L)				
1,4-DIOXANE	5.4	5.5	5.6	0.85

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW113A			MRC-MW114A
SAMPLE ID	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415
SAMPLE DATE	20150427	20150427	20150427	20150414
PCB AROCLORS (UG/L)				
AROCLOR-1016	NA	NA	NA	0.5 UJ
AROCLOR-1221	NA	NA	NA	0.5 UJ
AROCLOR-1232	NA	NA	NA	0.5 UJ
AROCLOR-1242	NA	NA	NA	0.5 UJ
AROCLOR-1248	NA	NA	NA	0.5 UJ
AROCLOR-1254	NA	NA	NA	0.5 UJ
AROCLOR-1260	NA	NA	NA	0.5 UJ
AROCLOR-1262	NA	NA	NA	0.5 UJ
AROCLOR-1268	NA	NA	NA	0.5 UJ
TOTAL AROCLOR	NA	NA	NA	0.5 UJ
PCB HOMOLOGS (UG/L)				
DECACHLOROBIPHENYL	0.022 U	0.0225 U	0.023 U	NA
DICHLOROBIPHENYLS	0.0039 U	0.0039 U	0.0039 U	NA
HEPTACHLOROBIPHENYLS	0.011 U	0.011 U	0.011 U	NA
HEXACHLOROBIPHENYLS	0.0087 U	0.00875 U	0.0088 U	NA
MONOCHLOROBIPHENYLS	0.0029 U	0.006225	0.011	NA
NONACHLOROBIPHENYLS	0.019 U	0.0195 U	0.02 U	NA
OCTACHLOROBIPHENYLS	0.0097 U	0.00975 U	0.0098 U	NA
PENTACHLOROBIPHENYLS	0.0058 U	0.00585 U	0.0059 U	NA
TETRACHLOROBIPHENYLS	0.0068 U	0.00685 U	0.0069 U	NA
TRICHLOROBIPHENYLS	0.0039 U	0.0039 U	0.0039 U	NA
METALS (UG/L)				
ANTIMONY	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA
COBALT	NA	NA	NA	NA
COPPER	NA	NA	NA	NA
IRON	NA	NA	NA	NA
LEAD	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA
MOLYBDENUM	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA
SILVER	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA
ZINC	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)				
PERCHLORATE	0.17 J	0.155	0.14 J	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	MRC-MW113A			MRC-MW114A
SAMPLE ID	MRC-MW-113A-042715	MRC-MW-113A-042715-AVG	MRC-MW-113A-042715-D	MRC-MW-114A-041415
SAMPLE DATE	20150427	20150427	20150427	20150414
MISCELLANEOUS PARAMETERS (MG/L)				
ALKALINITY	NA	NA	NA	NA
AMMONIA-N	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA
NITRATE-N	NA	NA	NA	NA
NITRITE-N	NA	NA	NA	NA
ORTHOPHOSPHATE	NA	NA	NA	NA
SILICON DIOXIDE	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA	NA	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW115A MRC-MW-115A-051415 20150514	MRC-MW116A MRC-MW-116A-042215 20150422
VOLATILES (UG/L)		
1,1,1,2-TETRACHLOROETHANE	NA	NA
1,1,1-TRICHLOROETHANE	0.22 U	0.22 U
1,1,2,2-TETRACHLOROETHANE	0.34 U	0.34 U
1,1,2-TRICHLOROETHANE	0.33 U	0.33 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.26 U	0.26 U
1,1-DICHLOROETHANE	0.28 U	0.28 U
1,1-DICHLOROETHENE	0.29 U	0.29 U
1,1-DICHLOROPROPENE	NA	NA
1,2,3-TRICHLOROBENZENE	0.93 U	0.93 U
1,2,3-TRICHLOROPROPANE	NA	NA
1,2,3-TRIMETHYLBENZENE	NA	NA
1,2,4-TRICHLOROBENZENE	0.82 U	0.82 U
1,2,4-TRIMETHYLBENZENE	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	1.5 U
1,2-DIBROMOETHANE	0.28 U	0.28 U
1,2-DICHLOROBENZENE	0.38 U	0.38 U
1,2-DICHLOROETHANE	0.32 U	0.32 U
1,2-DICHLOROPROPANE	0.24 U	0.24 U
1,3-DICHLOROBENZENE	0.25 U	0.25 U
1,3-DICHLOROPROPANE	NA	NA
1,4-DICHLOROBENZENE	0.27 U	0.27 U
1,4-DIOXANE	58.9 U	58.9 UR
2,2-DICHLOROPROPANE	NA	NA
2-BUTANONE	1.8 U	1.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA
2-CHLOROTOLUENE	NA	NA
2-HEXANONE	1.3 U	1.3 U
4-CHLOROTOLUENE	NA	NA
4-ISOPROPYLTOLUENE	NA	NA
4-METHYL-2-PENTANONE	1.5 U	1.5 U
ACETONE	3.1 U	3.1 U
BENZENE	0.23 U	0.23 U
BROMOBENZENE	NA	NA
BROMOCHLOROMETHANE	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.27 U	0.27 U
BROMOFORM	0.4 U	0.4 U
BROMOMETHANE	0.44 U	0.66 J
CARBON DISULFIDE	0.23 U	0.23 U
CARBON TETRACHLORIDE	0.31 U	0.31 U
CHLOROBENZENE	0.19 U	0.19 U
CHLORODIBROMOMETHANE	0.45 U	0.45 U
CHLOROETHANE	0.33 U	0.33 U
CHLOROFORM	0.21 U	0.21 U
CHLOROMETHANE	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.32 U	0.32 U

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION **SAMPLE ID** **SAMPLE DATE**	**MRC-MW115A** **MRC-MW-115A-051415** **20150514**	**MRC-MW116A** **MRC-MW-116A-042215** **20150422**
CIS-1,3-DICHLOROPROPENE	0.31 U	0.31 U
CYCLOHEXANE	0.29 U	0.29 U
DIBROMOMETHANE	NA	NA
DICHLORODIFLUOROMETHANE	0.33 U	0.33 U
DIISOPROPYL ETHER	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA
ETHYL TERT-BUTYL ETHER	NA	NA
ETHYLBENZENE	0.34 U	0.34 U
HEXACHLOROBUTADIENE	NA	NA
ISOPROPYLBENZENE	0.22 U	0.22 U
M+P-XYLENES	0.52 U	0.52 U
METHYL ACETATE	0.32 U	0.32 U
METHYL CYCLOHEXANE	0.3 U	0.3 U
METHYL TERT-BUTYL ETHER	0.33 U	0.33 U
METHYLENE CHLORIDE	0.45 U	0.45 U
NAPHTHALENE	NA	NA
N-BUTYLBENZENE	NA	NA
N-PROPYLBENZENE	NA	NA
O-XYLENE	0.33 U	0.33 U
SEC-BUTYLBENZENE	NA	NA
STYRENE	0.24 U	0.24 U
TERT-AMYL METHYL ETHER	NA	NA
TERT-AMYL METHYL ETHER	NA	NA
TERT-BUTYLBENZENE	NA	NA
TERTIARY-BUTYL ALCOHOL	NA	NA
TETRACHLOROETHENE	0.35 U	0.35 U
TOLUENE	0.23 U	0.23 U
TOTAL 1,2-DICHLOROETHENE	NA	NA
TOTAL XYLENES	NA	NA
TRANS-1,2-DICHLOROETHENE	0.26 U	0.26 U
TRANS-1,3-DICHLOROPROPENE	0.29 U	0.29 U
TRICHLOROETHENE	0.33 U	0.33 U
TRICHLOROFLUOROMETHANE	0.24 U	0.24 U
VINYL ACETATE	NA	NA
VINYL CHLORIDE	0.3 U	0.3 U
VOLATILE GASES (UG/L)		
ETHANE	NA	NA
ETHENE	NA	NA
METHANE	NA	NA
SEMIVOLATILES (UG/L)		
1,4-DIOXANE	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW115A MRC-MW-115A-051415 20150514	MRC-MW116A MRC-MW-116A-042215 20150422
PCB AROCLORS (UG/L)		
AROCLOR-1016	NA	NA
AROCLOR-1221	NA	NA
AROCLOR-1232	NA	NA
AROCLOR-1242	NA	NA
AROCLOR-1248	NA	NA
AROCLOR-1254	NA	NA
AROCLOR-1260	NA	NA
AROCLOR-1262	NA	NA
AROCLOR-1268	NA	NA
TOTAL AROCLOR	NA	NA
PCB HOMOLOGS (UG/L)		
DECACHLOROBIPHENYL	NA	NA
DICHLOROBIPHENYLS	NA	NA
HEPTACHLOROBIPHENYLS	NA	NA
HEXACHLOROBIPHENYLS	NA	NA
MONOCHLOROBIPHENYLS	NA	NA
NONACHLOROBIPHENYLS	NA	NA
OCTACHLOROBIPHENYLS	NA	NA
PENTACHLOROBIPHENYLS	NA	NA
TETRACHLOROBIPHENYLS	NA	NA
TRICHLOROBIPHENYLS	NA	NA
METALS (UG/L)		
ANTIMONY	NA	NA
ARSENIC	NA	NA
BARIUM	NA	NA
BERYLLIUM	NA	NA
CADMIUM	NA	NA
CHROMIUM	NA	NA
COBALT	NA	NA
COPPER	NA	NA
IRON	NA	NA
LEAD	NA	NA
MANGANESE	NA	NA
MERCURY	NA	NA
MOLYBDENUM	NA	NA
NICKEL	NA	NA
POTASSIUM	NA	NA
SELENIUM	NA	NA
SILVER	NA	NA
THALLIUM	NA	NA
VANADIUM	NA	NA
ZINC	NA	NA
MISCELLANEOUS PARAMETERS (UG/L)		
PERCHLORATE	NA	NA

Table D-1
Chemical Results for Groundwater Samples-April-June, 2015
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION SAMPLE ID SAMPLE DATE	MRC-MW115A MRC-MW-115A-051415 20150514	MRC-MW116A MRC-MW-116A-042215 20150422
MISCELLANEOUS PARAMETERS (MG/L)		
ALKALINITY	NA	NA
AMMONIA-N	NA	NA
CARBONATE ALKALINITY	NA	NA
CHLORIDE	NA	NA
DISSOLVED ORGANIC CARBON	NA	NA
HEXAVALENT CHROMIUM	NA	NA
NITRATE-N	NA	NA
NITRITE-N	NA	NA
ORTHOPHOSPHATE	NA	NA
SILICON DIOXIDE	NA	NA
SULFATE	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA
TOTAL ORGANIC CARBON	NA	NA

1 A "B" was inadvertantly used for the Sample ID for well MRC-MW77A.

J - chemical detected, concentration is estimated above the method detection limit but below the practical quantitation limit.

MG/L - milligrams per liter

NA - not analyzed

R - detected result is considered to be qualitatively or quantitatively unreliable.

U - not detected at the concentration left of the letter

UG/L - micrograms per liter

UJ - analyte not detected. Quantitation limit or detection limit may be inacurate or imprecise.

UR - non-detect result is considered to be qualitatively or quantitatively unreliable.