2014 Surface Water Sampling Report
Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

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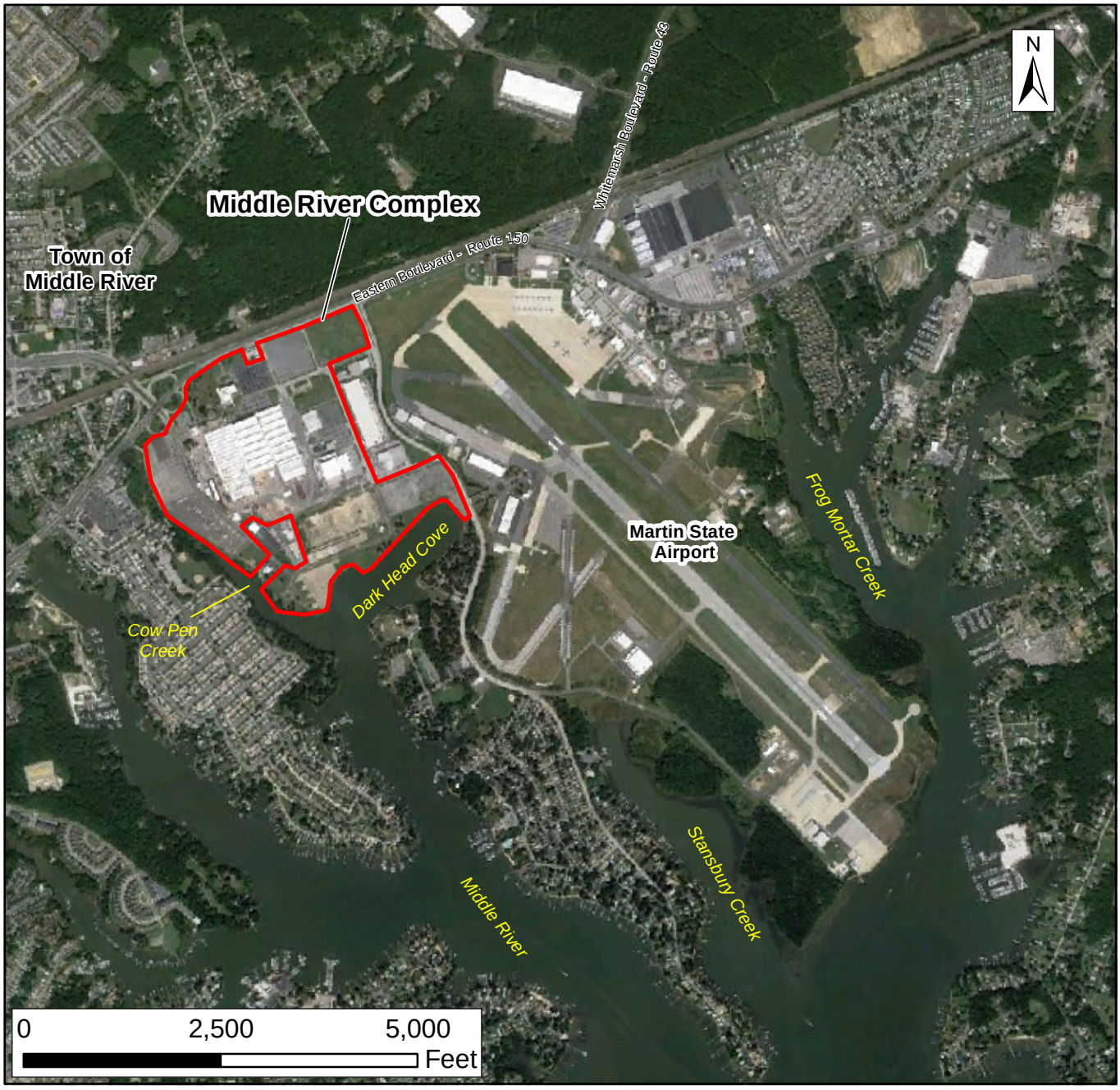
ACRONYMS

AWQC	ambient water quality criteria
BTAG	(USEPA) Biological Technical Advisory Group
ºC	degrees Celsius
cis-1,2-DCE	*cis*-1,2-dichloroethene
COC	chain of custody
COMAR	Code of Maryland Regulations
DO	dissolved oxygen
ESA	environmental site assessment
GIS	geographic information system
GLM	Glenn L. Martin Company
HHRA	human health risk assessment
IDW	investigation-derived waste
Lockheed Martin	Lockheed Martin Corporation
MDE	Maryland Department of the Environment
µg/L	microgram(s) per liter
mg/L	milligram(s) per liter
MRC	Middle River Complex
mS/cm	milliSiemen(s) per centimeter
mv	millivolt(s)
MW	monitoring well
NRWQC	national recommended water quality criteria
NTU	nephelometric turbidity unit(s)
ORP	oxidation-reduction potential
PCB	polychlorinated biphenyl
PDF	portable document format
pH	a measure of hydrogen-ion content indicating relative acidity or alkalinity
PM	project manager
REC	recognized environmental condition
SC	specific conductance
S.U.	standard unit(s)
SW	surface water
TCE	Trichloroethene (also known as trichloroethylene)

Tetra Tech	Tetra Tech, Inc.
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

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



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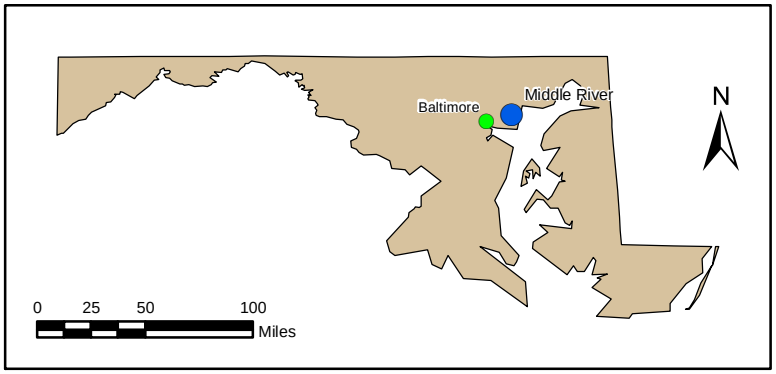

FIGURE 1-1

MIDDLE RIVER COMPLEX LOCATION MAP

Lockheed Martin Middle River Complex
Middle River, Maryland

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Section 2
Site Background

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

LMC Properties, Inc. (the current MRC property owner) is responsible for facility and building management and maintenance. The main tenant at the site, MRA Systems, Inc. (a subsidiary of General Electric Company), designs, manufactures, fabricates, tests, overhauls, repairs, and maintains aeronautical structures, parts, and components for military and commercial applications. Lockheed Martin Mission Systems & Training (a Lockheed Martin Corporation [Lockheed Martin] business segment) conducts engineering activities and fabricates, assembles, tests, and otherwise supports vertical-launch systems. A Lockheed Martin subsidiary, Applied NanoStructured Solutions, LLC also occupies a portion of MRC, where it researches and designs nanotechnology applications.

In 1929, the Glenn L. Martin Company (GLM) (a predecessor entity of Lockheed Martin) acquired a large parcel of undeveloped land in Middle River, Maryland to manufacture aircraft for United States government and commercial clients. In the early 1960s, GLM merged with American-Marietta Company to form Martin Marietta Corporation. Around 1975, the adjacent airport to the east (currently Martin State Airport, comprising approximately 750 acres) was transferred to the State of Maryland. In 1995, Martin Marietta Corporation merged with Lockheed to form Lockheed Martin Corporation. Shortly after the merger, General Electric Company acquired most of Lockheed Martin's aeronautical business in Middle River and a General Electric subsidiary, MRA Systems, Inc., began operations at MRC.

Numerous environmental investigations have been conducted at the Lockheed Martin MRC. These include underground storage-tank closures and abandonments, soil excavations, Phase I environmental site assessments (ESAs), and Phase II ESAs. A 2003 facility-wide Phase I ESA at the Lockheed Martin MRC identified 13 recognized environmental conditions (RECs) at the facility, associated primarily with then-current site conditions (Earth Tech, 2003). Subsequent review of historical site activities identified another 18 RECs at the facility (Tetra Tech, 2004). Many RECs are in the southern portion of the facility along the waterfront.

Soil and groundwater sampling have identified sporadic soil and groundwater contamination in environmental media underlying the facility. The MRC was previously entered into the Maryland Department of the Environment (MDE) Voluntary Cleanup Program. Studies of soil and groundwater are ongoing (Tetra Tech, 2012). Remediation of the MRC is being transitioned to the MDE Controlled Hazardous Substances regulatory framework.

Sampling of surface water and sediment adjacent to the MRC's southern and western property boundaries was first done in March 2005. Subsequent samples were collected in 2005, 2010, 2011, and 2012 to characterize surface water, to support the objectives of sediment characterization and remedy design development, and to support storm drainage investigations. The objective of the current annual sampling program is to determine the extent to which key groundwater and surface soil contaminants have been transported to surface water. Table C-2 in Appendix C summarizes detected concentrations of trichloroethene [TCE; also known as trichloroethylene], cis-12-dichloroethene [cis-12-DCE], vinyl chloride, and 1,4-dioxane (the primary chemicals of concern at the site) for sampling episodes conducted between 2012 and 2014.

Thirteen surface water samples were collected from Dark Head Cove and Cow Pen Creek in June 2013, and chemically analyzed for volatile organic compounds (VOCs). Samples collected in Cow Pen Creek were also analyzed for 1,4-dioxane. These samples were collected to evaluate VOC and 1,4-dioxane concentrations that may be emanating from stormwater outfalls or groundwater plumes. TCE was detected at low concentrations in all Dark Head Cove samples and in one of two samples collected in Cow Pen Creek (12 of 13 surface water samples), but no TCE concentration (0.35*J*–1.9*J* micrograms per liter [µg/L]) exceeded its ecological surface-water screening level (21 µg/L), its human health consumption-of-aquatic-organism screening

level (300 µg/L), or its site-specific swimming screening level (10 µg/L). Acetone was detected in 11 samples, at concentrations (1.5*J*–9.3*J* µg/L) below its ecological surface-water screening level of 1,500 µg/L (Tetra Tech, 2013b).

Town of Middle River

AMTRAK RAILROAD

EASTERN BOULEVARD

MARTIN BLVD.

BLOCK 'A'

BUILDING "G"

PARKING LOT NO. 5

BLOCK 'B'

PARKING LOT NO. 4

ATHLETIC FIELD

CHESAPEAKE PLAZA

WILSON POINT ROAD

Martin State Airport

BLOCK 'A'

PARKING LOT NO. 1

BUILDING "M"

BUILDING "P"

BLOCK 'I'

GATE "A"

BUILDING "L"

BUILDING "C"

BUILDING "B"

PROGRAM BUILDING

ANNEX BUILDING

ENG. DEV. LAB BLDG.

JOHNSON AND TOWERS

VERTICAL ASSEMBLY BUILDING

PARKING LOT NO. 2

MAINTENANCE OFFICE AND SHOP

BUILDING "A"

FIRECOAT BUILDING

BLOCK 'H'

DARK HEAD COVE ROAD

PARKING LOT NO. 6

BLOCK 'D'

FOUR #2 FUEL OIL USTs ABANDONED IN-PLACE

DROP HAMMER BUILDING ACTIVE FIRING RANGE

MAINTENANCE GARAGE

POWER HOUSE

DRUM STORAGE FACILITY

FLAME CUT

DIE STORAGE

CHESAPEAKE PARK PLAZA

PARKING LOT NO. 3

HAZARDOUS WASTE STORAGE BUILDING

BLOCK 'E'

500,000-GAL. WATER TANK

TRANSFER SHED

FORMER BUILDING "D"

FIRE PUMP BUILDING WITH 275-GAL DIESEL FUEL AST

FORMER 500-GAL. UST

FORMER 500,000-GAL. DIESEL FUEL AST

BLOCK 'G'

CONSERVATION BUILDING

TILLEY CHEMICAL COMPANY

FORMER SEWAGE TREATMENT PLANT

NORTH AMERICAN ELECTRIC

CHESAPEAKE PARK PLAZA

WATERFRONT LOT

DARK HEAD COVE

FORMER AERO PYHSICS LAB./WIND TUNNEL TEST BUILDING

FORMER HYDRAULIC AND FIELD TEST BUILDING

COW PEN CREEK

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

BLOCK 'F'

FORMER TRAINING SCHOOL

FORMER RAMP STORAGE BUILDING

FORMER BOAT HOUSE

FIGURE 2-1

MIDDLE RIVER COMPLEX
SITE LAYOUT AND TAX BLOCKS

LEGEND

MIDDLE RIVER COMPLEX TAX BLOCK BOUNDARY

STRUCTURE

RAILROAD TRACKS

Lockheed Martin Middle River Complex
Middle River, Maryland

0 150 300 600 Feet

N

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Section 3
Investigation Approach and Methodology

3.1 SURFACE WATER SAMPLING

The overall objective of the 2014 surface water sampling is to provide additional and updated surface water quality data for Dark Head Cove and Cow Pen Creek. Specifically, the current goals are to determine whether:

- volatile organic compounds (VOCs) detected in groundwater are reaching Dark Head Cove and Cow Pen Creek through groundwater infiltration or transport through the storm drains
- 1,4-dioxane detected in groundwater is reaching Cow Pen Creek through groundwater infiltration or transport through the storm drains
- polychlorinated biphenyls (PCBs) detected in Block E soils are reaching Dark Head Cove through the storm drain system and/or are there due to contaminants present in the sediment.

Concentrations of PCBs, VOCs, and 1,4-dioxane in surface water were determined through laboratory analysis of the samples. These compounds are known contaminants at the Middle River Complex (MRC), and may migrate into the adjacent surface bodies through groundwater and surface water flow.

Thirteen surface water samples were collected from Dark Head Cove and Cow Pen Creek on June 9, 2014 (Figure 3-1). Eleven were collected in Dark Head Cove and two were collected in Cow Pen Creek. All samples were analyzed for VOCs (the primary contaminants of concern in MRC groundwater). Samples collected from Dark Head Cove were also analyzed for PCBs, whereas samples from Cow Pen Creek were also analyzed for 1,4-dioxane. Sampling was in accordance with the *2014-2015 Groundwater and Surface Water Monitoring Work Plan* (Tetra Tech, Inc. [Tetra Tech], 2014a).

3.1.1 Surface Water Sampling and Analyses

Surface water samples were collected in Dark Head Cove along transects at Outfalls 005 through 009 (Figure 3-1). Two samples were collected along each transect near Outfalls 006–009: one sample per transect was collected 10-feet from shore ("A" sample) and a second was collected 50-feet from shore ("B" sample). At Outfall 005 (which has two outlets), one sample was collected at each outlet 10-feet from shore ("A1" and "A2" samples), and a single sample was collected 50-feet from shore, approximately midway between the two outlets ("B" sample). Surface water samples in Cow Pen Creek were collected near the western trichloroethene (TCE) plume. Samples were collected along the approximate centerline of the creek upstream and downstream of the estimated boundaries of the western TCE plume. Table 3-1 summarizes (by surface water sampling location) the chemical analyses conducted for the 2014 monitoring program (Tetra Tech, 2014a).

Surface water samples were collected as grab samples using direct-fill sampling techniques. All samples were collected approximately one foot below the water surface using a stainless-steel discrete-interval sampler (i.e., a "bacon bomb" sampler). The sampler was lowered to approximately one foot below the water surface, and the check valve was engaged to allow it to fill; the sampler was then brought to the surface, and the water was removed through a valve to fill laboratory-supplied containers. Laboratory-cleaned, hydrochloric-acid-preserved, 40-milliliter (mL) sample vials were used for VOC analysis; separate containers were used to collect samples for 1,4-dioxane and PCB analysis. All equipment was cleaned after each sample had been collected. The discrete-interval sampler was cleaned after each use by rinsing with potable water; no decontamination fluids other than potable water were used, so it was not necessary to collect and dispose of rinse water generated during this sampling event.

Samples were analyzed at a fixed-base laboratory for VOCs via United States Environmental Protection Agency (USEPA) Method 8260C, for 1,4-dioxane via Method 522, and for PCBs via Method 680. One duplicate VOC sample was collected. Trip blanks were provided in each cooler containing VOC samples to ensure quality assurance/quality control. Water-quality parameters, including temperature, pH (a measure of hydrogen-ion content indicating relative acidity or alkalinity), specific conductance (SC), salinity, turbidity, dissolved oxygen (DO), color, and oxidation-reduction potential (ORP), were measured at all surface water sampling locations at the time of sampling. Although listed in the work plan, hardness was not measured because

samples for hardness-dependent metals were not collected during this round. The depth of water at each sampling location was also recorded.

Tidal stages were recorded on June 9, 2014, before sampling started, using the MRC Cow Pen Creek direct-read staff gauge. The staff gauge read 4.15 feet at 10:00 a.m. Tide data for the North Point station (south of Middle River, Maryland) report high tide at 4:24 a.m., low tide at 11:26 a.m., and high tide at 4:16 p.m. Surface water samples were collected at low tide between 10:02 a.m. and 12:02 p.m., at the end of the falling limb of the tidal cycle and the beginning of its rising limb (Maryland Department of Natural Resources, 2014). All information was documented on surface water sample forms (Appendix A) and in the master site logbook.

Surface water sampling locations (horizontal locational coordinates) were surveyed using a handheld global positioning system receiver and recorded in the field logbook. Sampling locations were recorded in degrees, minutes, and seconds using geographical latitude and longitude coordinates, and have an accuracy of approximately 15 feet. Coordinates were converted to the Maryland State Plane North American Datum 1983 (feet) for use in the MRC geographical information system (GIS).

3.1.2 Documentation

A master site logbook was maintained as an overall record of field activities. Sample documentation includes completing a chain of custody (COC) form and matrix-specific sampling log sheets. A COC form is standardized to summarize and document pertinent sample information, such as sample identification and type, matrix, date and time of collection, preservation, requested analysis, and the times and dates of custody transfers. Sample custody procedures document sample acquisition and integrity. The COC form accompanies the data-validation report in Appendix B.

3.1.3 Sample Nomenclature and Handling

Surface water samples were identified with a unique sample-identification tag. Surface water samples were labeled with an “SW” prefix followed by the sample number, followed by an “A” (designating a sample collected 10 feet from the shoreline) or a “B” (designating a sample collected 50 feet from the shoreline), followed by a six-digit sampling date. For example, a surface water sample collected on June 9, 2014 from transect MRC-SW6 at the 10-foot (“A”)

location was labeled MRC-SW6A-060914. The trip blank was labeled with a "TB" prefix followed by the blank's six-digit submittal date (e.g., TB-060914).

Sample handling includes field-related considerations concerning the selection of sample containers, preservatives, allowable holding times, and analyses requested. Proper custody procedures were followed throughout all phases of sample collection and handling. COC protocols used throughout sample handling ensure the evidentiary integrity of sample containers.

Sample containers were released under signature from the laboratory and accepted under signature by the sampler(s) or individual responsible for maintaining custody until the sample containers were transferred to the sampler(s). Transport containers returned to the laboratory were sealed with strapping tape and a tamper-proof custody seal. The custody seal includes the signature of the individual initially releasing the transport container, along with the date and time.

3.1.4 Equipment Decontamination

Both dedicated and disposable equipment (e.g., gloves, rope) were used for surface water sampling to minimize decontamination. The stainless-steel discrete-interval sampler (i.e., a "bacon bomb" sampler) was rinsed with distilled water before the first sample was collected and after each use.

3.1.5 Waste Management

No investigation-derived waste (IDW) was generated during this surface water sampling event. General waste (i.e., gloves, rope, etc.) was disposed of in the proper waste disposal containers at the facility.

3.2 DATA MANAGEMENT

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

3.2.1 Data Tracking and Control

A cradle-to-grave sample-tracking system was used from the beginning to the end of the sampling event. This system allows for early detection of errors made in the field so adjustments can be made while the field team is still mobilized. Before field mobilization, the field operations leader coordinated and initiated sample tracking. Sample jar labels were handwritten in the field and reviewed to ensure that they were accurate and adhered to work plan requirements.

The project manager (PM) coordinated with the analytical laboratory to ensure that they were aware of the number and types of samples and analyses being submitted. On each day that samples were collected in the field, the field operations leader forwarded that day's COC forms to the PM (or designee) and the laboratory. The PM or their designee confirmed that the COC forms provided the information required by the work plan. After all requested analyses had been completed, the laboratory submitted an electronic deliverable for every sample delivery group. When all electronic deliverables had been received from the laboratory, the PM or their designee ensured that the laboratory had performed all requested analyses.

3.2.2 Sample Information

Data from field measurements were recorded using appropriate log sheets and summarized in tabular form. Raw instrument-data from the laboratory were also tabulated. The field operations leader verified field data daily; laboratory data were verified by the group supervisor and then by the laboratory's quality control/documentation department.

3.2.3 Project Data Compilation

The analytical laboratory generated a portable document format (PDF) file of the analytical data packages, as well as electronic database deliverables. The electronic data were checked against the PDF file from the laboratory and updated as required by data-qualifier flags applied during data validation. All data, such as units of measure and chemical nomenclature, are consistent with the project database.

3.2.4 Geographical Information System

Data management systems consist of a relational database and GIS used to manage environmental information pertaining to the MRC. The relational database stores chemical, geological, hydrogeological, and other environmental data collected during environmental

investigations; the GIS is created from the relational database and contains subsets of the larger data pool. The GIS allows posting of environmental data onto base maps to represent the information graphically. Compiled sampling, chemical, and positional data were incorporated into the GIS.

3.3 DATA REVIEW

Data from the laboratory were entered into a sample database and evaluated against various screening criteria. Data validation (consisting of data completeness, holding time, calibrations, laboratory contamination, and detection limits) was completed concurrent with the data evaluation. The review was based on USEPA Region 3's *Modifications to the National Functional Guidelines for Data Review* (USEPA, 1993 and 1994) and the specifics of the analytical method used. Data from this sampling event consist of surface water sample chemical results. Appendix C contains tables of all 2014 MRC surface water sample analytical data, and includes validation qualifiers, non-detects, and analytical detection limits.

Validation of the MRC data concluded that they are acceptable for their intended uses (i.e., risk screening and risk assessment). The data qualifiers (i.e., flags) applied to the chemical results during data validation are listed below:

J The analyte is considered present in the sample, but the value is estimated and may not meet highest accuracy or precision standards. In this program, samples were qualified with "*J*" because quantitation was above the method detection limit but below the laboratory reporting limit.

U Not detected; the analyte was not detected at the reported value.

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

The first flag appears on the chemical-results tables in Section 4, and all flags appear in Appendices B and C.

Table 3-1

Chemical Analyses of Surface Water Samples, June 2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin, Middle River Complex, Middle River, Maryland

Sampling location	Sample number	Distance from shore (feet)	Analytical parameters	Sampling month	Number of samples
Dark Head Cove					
Outfall 005	SW5A1 SW5A2 SW5B	10[(1)] 10[(1)] 50	Volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs) field parameters	June	1 1 1
Outfall 006 and near the eastern trichloroethene (TCE) plume	SW6A SW6B	10 50	VOCs, PCBs, field parameters	June	1 1
Outfall 007	SW7A SW7B	10 50	VOCs, PCBs, field parameters	June	1 1
Outfall 008 and near eastern TCE plume	SW8A SW8B	10 50	VOCs, PCBs, field parameters	June	1 1
Outfall 009	SW9A SW9B	10 50	VOCs, PCBs, field parameters	June	1 1
Cow Pen Creek					
Near the western TCE plume	SW1A SW2A	Upstream downstream (both centerline)	VOCs, 1,4-dioxane, field parameters	June	1 1

[(1)]Two near-shore samples (10-feet out) were collected at Outfall 005 only. One near-shore sample was collected at the other Dark Head Cove outfalls (006–009).

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2014 ESRI and its data suppliers).

MIDDLE RIVER COMPLEX

EASTERN TCE PLUME

WESTERN TCE PLUME

OUTFALL 001

OUTFALL 002

OUTFALL 003

OUTFALL 004

BLOCK G SWALE OUTFALL

OUTFALL 005

OUTFALL 006

OUTFALL 007

OUTFALL 008

OUTFALL 009

MRC-SW1A

MRC-SW2A

MRC-SW5A1

MRC-SW5A2

MRC-SW5B

MRC-SW6A

MRC-SW6B

MRC-SW7A

MRC-SW7B

MRC-SW8A

MRC-SW8B

MRC-SW9A

MRC-SW9B

MRC-STAFF01

MRC-STAFF02

DARK HEAD COVE

COW PEN CREEK

FIGURE 3-1

2014 SURFACE WATER SAMPLING LOCATIONS

LEGEND

- 2014 SURFACE WATER SAMPLE LOCATION
- STORMWATER OUTFALL LOCATION
- STAFF GAUGE
- EXTENT OF TCE IN GROUNDWATER GREATER THAN 5 UG/L (DASHED WHERE INFERRED)

TCE contours from Tetra Tech (2014b).
TCE = trichloroethene
µg/L = micrograms per liter

Lockheed Martin Middle River Complex
Middle River, Maryland

0 150 300 Feet

N

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Section 4
Results

Validated surface-water chemical data were used to generate a statistical summary table (Table 4-1) and a detection table (Table 4-2) listing positive detections (only) of chemical analytes in the June 2014 surface water samples. Tables 4-1 and 4-2 are based on the full data listing in Appendix C (Table C-1). Table 4-2 compares surface-water sampling results to several applicable screening criteria, including:

- United States Environmental Protection Agency (USEPA) Region 3 Biological Technical Advisory Group (BTAG) freshwater screening benchmarks (USEPA, 2006)
- USEPA Region 5 ecological screening level for 1,4-dioxane in water (USEPA, 2003)
- USEPA national recommended water quality criteria (NRWQC) for acute and chronic aquatic–organism exposures, and NRWQC for human health aquatic–organism consumption (USEPA, 2009)
- State of Maryland ambient water quality criteria (AWQC) for acute and chronic aquatic-organism-exposures, and AWQC for human health aquatic-organism-consumption (*Code of Maryland Regulations*, 2014)
- Site-specific screening levels for swimming (developed by Lockheed Martin Corporation [Lockheed Martin]) for current assessments of volatile organic compounds (VOCs) at Frog Mortar Creek near Martin State Airport (Tetra Tech, Inc., [Tetra Tech], 2013)

4.1 VOLATILE ORGANIC COMPOUNDS

As shown in Table 4-1, two VOCs were detected in surface water. Trichloroethene (TCE; also known as trichloroethylene), the primary VOC detected in the Middle River Complex (MRC) groundwater plumes, was detected in nine of 13 samples (69%). All nine positive detections of TCE were in Dark Head Cove; TCE was not detected in any samples collected from Cow Pen Creek. The only other VOC detected in surface water samples was carbon disulfide, found in one sample (SW5A1).

As shown in Table 4-2, all VOC concentrations are low and less than the screening criteria. All nine TCE results are "*J*" qualified, because the concentrations are above the method detection limit but below the laboratory practical quantitation limit.

Figure 4-1 shows the distribution of TCE in the Dark Head Cove and Cow Pen Creek samples. Detected TCE concentrations range from 0.3*J* micrograms per liter (µg/L) (MRC-SW5A2) to 0.54 µg/L (MRC-SW8A). MRC-SW5A2 (0.3*J* µg/L) is the only sample collected near Outfall 005 that contained a detectable concentration of TCE; this is also the lowest detected TCE concentration.

In the 2013 surface water sampling event (see Table C-2 in Appendix C), the highest TCE concentrations (1.1-1.9 µg/L) were from samples MRC-SW5A1, MRC-SW5A2, and MRC-SW5B collected near Outfall 005. However the highest TCE concentrations detected in 2012 (0.55*J*-0.82*J* µg/L; see Table C-2) and 2014 (0.52*J*-0.54*J* µg/L; see Table C-2 and Figure 4-1) were in samples collected at Outfalls 006 and 008, near the eastern TCE groundwater plume. The maximum TCE concentration in 2014 (0.54*J* µg/L at Outfall 008) is approximately one-third that of the maximum TCE concentration detected in 2013 (1.9 µg/L at Outfall 005). Note that the distribution of the contaminants can be affected by tidal fluxes of the creek.

Carbon disulfide was detected in only one sample (0.24*J* µg/L in sample SW5A1) collected near the western side of Outfall 005. This carbon disulfide concentration is less than one-third the ecological surface water screening-level (0.92 µg/L).

USEPA and the State of Maryland have not established acute or chronic freshwater criteria for TCE or carbon disulfide. However, USEPA and Maryland have established a human health consumption-of-aquatic-organism criterion for TCE (equal to 300 µg/L, when adjusted for the Maryland Department of the Environment [MDE] risk level of 1×10^{-05} [i.e., a one in 100,000 risk probability]). The BTAG ecological screening levels for TCE and carbon disulfide are 21 µg/L and 0.95 µg/L, respectively. The maximum detected TCE concentration (0.54 µg/L) in this investigation is at least one order of magnitude (i.e., a factor of 10) lower than the lowest (i.e., most conservative) regulatory screening level, and more than 18 times less than its site-specific swimming screening-criterion (10 µg/L).

4.2 1,4-DIOXANE

As shown in Figure 4-1, 1,4-dioxane was detected in both samples collected from Cow Pen Creek: sample SW1A (0.235*J* µg/L) and sample SW2A (0.156*J* µg/L). The highest concentration (0.235*J* µg/L) is nearly six orders of magnitude (nearly 100,000 times) lower than the USEPA ecological screening level (22,000 µg/L). Sample SW1A was collected closer to the leading edge of the western 1,4-dioxane plume (i.e., well MRC-MW12A) than SW2A was, which may be the reason for the higher 1,4-dioxane concentration there.

4.3 POLYCHLORINATED BIPHENYLS

Figure 4-1 also shows the distribution of polychlorinated biphenyls (PCBs) detected in surface water samples collected in Dark Head Cove in 2014. Pentachlorobiphenyls and tetrachlorobiphenyls are the only PCB homologues detected in the samples. Pentachlorobiphenyls (0.012-0.015 µg/L) were detected in two of 11 samples analyzed for PCBs, and tetrachlorobiphenyls (0.0066*J*–0.024 µg/L) were detected in six of 11 samples. All detected PCB concentrations (seven samples) exceed the BTAG (0.00064 µg/L) and human health consumption-of-aquatic-organism (0.000074 µg/L) criteria. PCB concentrations at only three samples (SW5A2, SW5B, and SW6B) exceed the chronic NRWQC criterion (0.014 µg/L). The highest concentrations of tetrachlorobiphenyls were detected in samples collected near Outfall 005; lower concentrations were detected near Outfalls 006 and 008. Pentachlorobiphenyls were detected in sample MRC-SW6B (0.015 µg/L) and sample MRC-SW7A (0.012 µg/L), collected near Outfalls 006 and 007, respectively.

Appendix D provides the results of a HHRA of the PCB concentrations detected in the surface waters of Dark Head Cove assuming recreational swimming in the Cove. The assessment assumes that a swimmer is dermally exposed and also ingests a small amount of surface water while swimming. The methodology used to conduct the HHRA is similar to that used in previous HHRAs conducted for Dark Head Cove and Cow Pen Creek, and considered available MDE and USEPA risk assessment guidance. The resultant cancer and non-cancer risk estimates indicate no significant risk from exposures due to swimming in Dark Head Cove. The cancer risk estimates are less than the MDE risk management benchmark of $1x10^{-5}$ (i.e., a one-in-one hundred thousand probability of developing cancer) and do not exceed the USEPA target risk range of

$1x\ 10^{-4}$ to $1x\ 10^{-6}$ (i.e., a one-in-one ten thousand to one-in-one million probability of developing cancer). The non-cancer risk estimates do not exceed a hazard index of one (i.e., adverse non-carcinogenic health effects are not anticipated as a consequence of exposure). The HHRA was conducted in a very conservative (i.e., health protective) manner. The risk estimates presented in Appendix D likely overestimate the risks incurred by human receptors swimming in Dark Head Cove. This further supports the conclusion that unacceptable risk would not be incurred as a consequence of recreational (swimming) exposure to the PCB concentrations in the surface waters of the Cove.

4.4 WATER QUALITY PARAMETERS

Field-measured water-quality parameters for each surface water sample are in Table 4-3. Data were collected for color, pH, specific conductivity (SC), temperature, turbidity, dissolved oxygen (DO), salinity, and oxidation-reduction potential (ORP). The color of the sampled surface water was uniformly greenish-brown. The pH varied from 6.38–8.07, with an average pH of 7.49. Specific conductivity ranged from 1.09–1.54 milliSiemens per centimeter (mS/cm), with an average value of 1.47 mS/cm. The average water temperature was 24.6 degrees Celsius (ºC). Turbidity varied between 6.43 and 12.02 nephelometric turbidity units (NTUs), with an average value of 8.58 NTUs. DO ranged from 4.46–8.66 milligrams per liter (mg/L), with an average of 7.38 mg/L. Salinity varied from 0.03 to 0.08%, with an average of 0.072%. ORP ranged from 200 to 257 millivolts (mv), with an average value of 213.8 mv.

The pH values measured during this event are consistent with natural surface water in this region. SC is closely associated with salinity, and samples with lower salinity had an expected lower SC, and vice versa. Water temperature was lower in Cow Pen Creek samples, which also had lower salinity and SC as compared to samples from Dark Head Cove. These results may be due to runoff into the creek, or restricted water flow into or out of the creek.

Turbidity was consistent in most samples, but slightly higher in Cow Pen Creek, possibly due to the shallow depths of that creek. As expected, DO concentrations are higher in colder water samples. All DO levels are typical or perhaps on the high side of typical indicating a healthy estuarine environment. ORP values are all positive, which is consistent with an oxygen-rich environment. All parameters are typical of a tidally controlled estuarine environment.

Table 4-1

Statistical Summary of Analytes Detected in Surface Water Samples, June 2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin Middle River Complex, Middle River, Maryland

Chemical	Frequency of detection		Mininum non-detect concentration	Maximum non-detect concentration	Mininum detected concentration	Maximum detected concentration	Sample with maximum detected concentration	Mean of all samples	Mean of positve detections	Standard deviation
	number	percent								
Volatile organic compounds (µg/L)										
CARBON DISULFIDE	1/13	8	0.22 U	0.22 U	0.24 J	0.24 J	MRC-SW5A1-060914	0.12	0.24	0.04
TRICHLOROETHENE	9/13	69	0.22 U	0.22 U	0.3 J	0.54 J	MRC-SW8A-060914	0.35	0.45	0.17
Semivolatile organic compounds (µg/L)										
1,4-DIOXANE	2/2	100	--	--	0.156 J	0.235 J	MRC-SW1A-060914	0.196	0.196	0.056
Polychlorinated biphenyls (µg/L)										
PENTACHLOROBIPHENYL	2/11	18	0.0088 U	0.011 U	0.012	0.015	MRC-SW6B-060914	0.0062	0.0135	0.0037
TETRACHLOROBIPHENYL	6/11	55	0.0054 U	0.0054 U	0.0066 J	0.024	MRC-SW5A2-060914	0.0077	0.0119	0.0069

Footnotes:

Statistical calculations used one-half the sample quantitation limit as a proxy concentration for non-detect samples, and one-half the detection limit for B-qualified data.

J - Positive result is considered estimated

µg/L - micrograms per liter

SW - surface water

U - not detected at the concentration shown left of the letter.

-- Value not available because analyte was detected in all samples analyzed.

Table 4-2

Analytes Detected in Surface Water Samples, June 2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 1 of 2

LOCATION SAMPLE ID SAMPLE DATE	National Recommended Ambient Water Quality Criteria[1]		Ecological Surface Water Screening Level[2]	Human Health Consumption of Organism Only[1,3]	Swimming Screening Levels[4]	MRC-SW1A MRC-SW1A-060914 6/9/2014	MRC-SW2A MRC-SW2A-060914 6/9/2014	MRC-SW5A1 MRC-SW5A1-060914 6/9/2014	MRC-SW5A2 MRC-SW5A2- 6/9/2014	MRC-SW5B MRC-SW5B-060914 6/9/2014	MRC-SW6A MRC-SW6A-060914 6/9/2014
	Acute	Chronic									
Volatile organic compounds (µg/L)											
CARBON DISULFIDE	NA	NA	0.92	NA	NA	--	--	0.24 J	--	--	--
TRICHLOROETHENE	NA	NA	21	300[3]	10	--	--	--	0.3 J	--	0.52 J
Semivolatile organic compounds (µg/L)											
1,4-DIOXANE	NA	NA	NA	NA	NA	0.235 J	0.156 J	NA	NA	NA	NA
Polychlorinated biphenyls (µg/L)											
PENTACHLOROBIPHENYLS	NA	0.014	0.000074	0.00064[3]	NA	NA	NA	--	--	--	--
TETRACHLOROBIPHENYLS	NA	0.014	0.000074	0.00064[3]	NA	NA	NA	0.011	0.024	0.016	0.0066 J

Table 4-2

Analytes Detected in Surface Water Samples, June 2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 2 of 2

LOCATION SAMPLE ID SAMPLE DATE	National Recommended Ambient Water Quality Criteria[1]		Ecological Surface Water Screening Level[2]	Human Health Consumption of Organism Only[1,3]	Swimming Screening Levels[4]	MRC-SW6B MRC-SW6B-060914 6/9/2014	MRC-SW7A MRC-SW7A-060914 6/9/2014	MRC-SW7B MRC-SW7B-060914 6/9/2014	MRC-SW8A MRC-SW8A-060914 6/9/2014	MRC-SW8B MRC-SW8B-060914 6/9/2014	MRC-SW9A MRC-SW9A-060914 6/9/2014	MRC-SW9B MRC-SW9B-060914 6/9/2014
	Acute	Chronic										
Volatile organic compounds (µg/L)												
CARBON DISULFIDE	NA	NA	0.92	NA	NA	--	--	--	--	--	--	--
TRICHLOROETHENE	NA	NA	21	300[3]	10	0.39 J	0.44 J	0.49 J	0.54 J	0.47 J	0.45 J	0.47 J
Semivolatile organic compounds (µg/L)												
1,4-DIOXANE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyls (µg/L)												
PENTACHLOROBIPHENYLS	NA	0.014	0.000074	0.00064[3]	NA	0.015	0.012	--	--	--	--	--
TETRACHLOROBIPHENYLS	NA	0.014	0.000074	0.00064[3]	NA	0.0071 J	--	--	0.0066 J	--	--	--

1 National Recommended Water Quality Criteria (http://water.epa.gov/scitech/swguidance/standards/current/index.cfm); and Maryland Numerical Criteria for Toxic Substances in Surface Waters, Code of Maryland Regulations (COMAR) 26.08.02.03 (http://www.dsd.state.md.us./comar/comarhtml/26/26.08.02.03-2.htm)

2 United States Environmental Protection Agency Region 3 Biological Technical Advisory Group Freshwater Screening Benchmarks.

3 Carcinogenic criterion is set at incremental cancer risk of 1×10^{-5}

4 Site specific screening levels developed for trichloroethene by Lockheed Martin for Frog Mortar Creek studies at Martin State Airport.

Shading indicates value exceeds a screening criterion.

-- - not detected at the method detection limit

J - result is estimated

µg/l - micrograms per liter

NA - criterion not available (columns 2-6) or not analyzed (remaining columns).

SW - surface water

Table 4-3

Surface Water Quality Field Measurements, June 2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin Middle River Complex, Middle River, Maryland

Sample No.	Color	pH (S.U.)	SC (mS/cm)	Temperature (ºC)	Turbidity (NTU)	DO (mg/L)	Salinity (%)	ORP (mv)
SW1A	Gr/Br	6.38	1.09	22.86	12.02	4.56	0.05	257
SW2A	Gr/Br	6.67	1.34	24	11.67	4.46	0.07	224
SW5A1	Gr/Br	6.87	1.54	24.32	8.29	7.77	0.08	223
SW5A2	Gr/Br	7.27	1.54	24.48	7.67	7.89	0.08	214
SW5B	Gr/Br	7.55	1.53	24.4	8.31	7.64	0.08	211
SW6A	Gr/Br	7.89	1.5	25.08	7.72	8.56	0.03	206
SW6B	Gr/Br	7.88	1.51	24.79	6.72	7.45	0.08	203
SW7A	Gr/Br	7.53	1.5	25.03	9.66	8.66	0.08	214
SW7B	Gr/Br	7.65	1.52	24.91	8.84	8.25	0.08	215
SW8A	Gr/Br	8.07	1.51	25.38	6.43	7.2	0.08	203
SW8B	Gr/Br	7.94	1.49	24.88	8.6	8.02	0.07	207
SW9A	Gr/Br	7.78	1.52	24.95	7.82	7.6	0.08	202
SW9B	Gr/Br	7.9	1.5	24.74	7.85	7.85	0.08	200
Average	**Gr/Br**	**7.49**	**1.47**	**24.6**	**8.58**	**7.38**	**0.072**	**213.8**

ºC— degrees Celsius
DO— dissolved oxygen
Gr/Br— greenish brown
mg/L— milligram(s) per liter
mS/cm— milliSiemen(s) per centimeter
mv— millivolts
NTU— nephelometric turbidity unit(s)
ORP— oxidation-reduction potential
pH— hydrogen ion content (a measure of acidity or alkalinity)
SC— specific conductance
S.U.— standard unit(s)

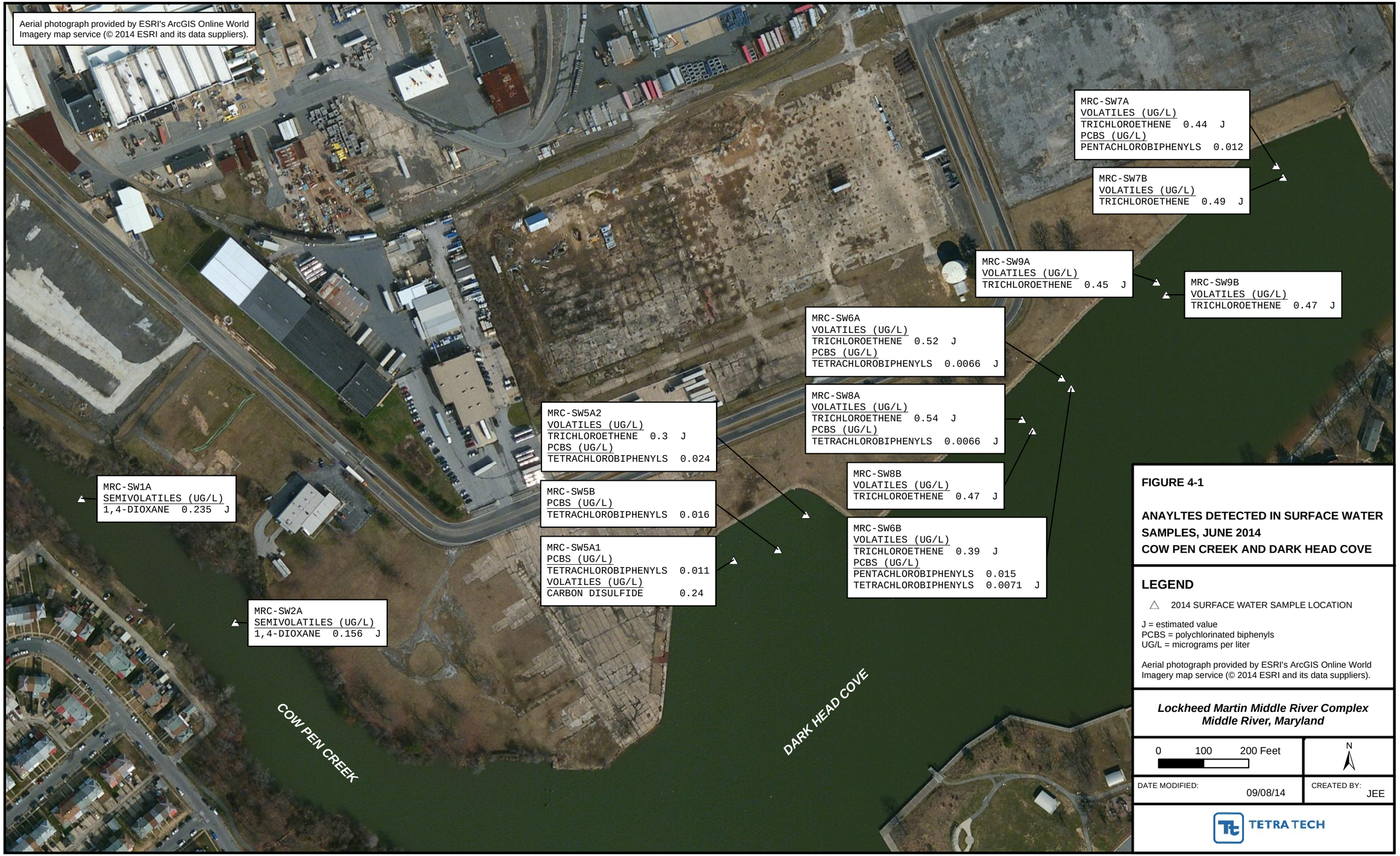

FIGURE 4-1

ANAYLTES DETECTED IN SURFACE WATER SAMPLES, JUNE 2014
COW PEN CREEK AND DARK HEAD COVE

LEGEND

△ 2014 SURFACE WATER SAMPLE LOCATION

J = estimated value
PCBS = polychlorinated biphenyls
UG/L = micrograms per liter

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2014 ESRI and its data suppliers).

Lockheed Martin Middle River Complex
Middle River, Maryland

0 100 200 Feet

N

DATE MODIFIED: 09/08/14

CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_sw_tags_aug2014.mxd)
09/08/14 -- JEE

Section 5
Summary

A summary Lockheed Martin Corporation's (Lockheed Martin's) June 2014 Cow Pen Creek and Dark Head Cove surface water investigation follows:

- Thirteen surface water samples were collected from Cow Pen Creek and Dark Head Cove on June 9, 2014 and chemically analyzed for volatile organic compounds (VOCs), 1,4-dioxane (for the two Cow Pen Creek samples only), and polychlorinated biphenyls (PCBs) (for the Dark Head Cove samples only). These analyses were performed to determine if these constituents are emanating from stormwater outfalls, sediments, or groundwater plumes originating at the Middle River Complex (MRC).

- In Dark Head Cove, samples were collected along each of five transects spaced along the northern shoreline. Along four transects, one sample was collected near the shoreline ("A" sample) and a second was collected approximately 50 feet from the shoreline ("B" sample). At Outfall 005 (which has two outlets), samples were collected 10-feet offshore from each outlet, and a third sample was collected 50-feet offshore between the two outlets. Each sample was collected approximately one foot below the water surface.

- Chemical data were validated in accordance with the United States Environmental Protection Agency (USEPA) *Region III Modifications to the National Functional Guidelines for Organic Data Review* (USEPA, 1993 and 1994) and the specifics of the analytical methods used.

- Sampling results were screened against the following standards:

    - United States Environmental Protection Agency Region 3 Biological Technical Advisory Group (BTAG) ecological freshwater screening-benchmarks

    - United States Environmental Protection Agency Region 5 ecological screening level for 1,4-dioxane

    - United States Environmental Protection Agency national recommended water quality criteria (NRWQC) for acute and chronic aquatic-organism exposures and for human health aquatic-organism consumption

    - State of Maryland ambient water quality criteria (AWQC) for acute and chronic aquatic-organism exposures and for human health aquatic-organism consumption

    - Site-specific screening levels developed by Lockheed Martin Corporation for evaluating risks to recreational swimmers from exposure to volatile organic compounds in surface water

- The volatile organic compound trichloroethene (TCE; also known as trichloroethylene) was detected at low concentrations in nine of 13 surface water samples. Trichloroethene was detected at low concentrations in all but two Dark Head Cove samples. Trichloroethene was not detected in the two Cow Pen Creek samples.
- Trichloroethene concentrations did not exceed its ecological surface-water screening level, the human health consumption-of-aquatic-organism screening level, or the site-specific swimming screening level.
    - Only one of three samples collected near Outfall 005 East (MRC-SW5B) produced detectable concentrations of trichloroethene.
    - Detected trichloroethene concentrations were relatively low (i.e., much less than ecological and human health screening levels), but were slightly higher nearer the shoreline at Outfalls 006, 008, and 005 East.
    - The area of two Dark Head Cove outfalls (Outfalls 006 and 008) are suspected to be influenced by the lower portion of the eastern trichloroethene plume that originates in Tax Block E, north of Chesapeake Park Plaza.
    - Trichloroethene concentrations in transects near Outfalls 007 and 009 vary little with distance from the shoreline (i.e., concentrations in samples collected near the shoreline are similar to concentrations in samples collected 50 feet from the shoreline).
- The volatile organic compound carbon disulfide was detected in one sample adjacent to the Outfall 005 transect, at a low concentration. This concentration is less than one third of its ecological surface-water screening level.
- No other volatile organic compounds were detected. This contrasts with observations made in the 2013 sampling episode, during which low estimated concentrations of cis-1,2-dichloroethene were detected at three sampling locations.
- 1,4-Dioxane was detected at low concentrations in both samples collected from Cow Pen Creek. 1,4-Dioxane is likely being discharged to Cow Pen Creek from the western 1,4-dioxane groundwater plume. 1,4-Dioxane was not detected in the 2013 samples. 1,4-Dioxane was analyzed in 2014 using United Stated Environmental Protection Agency Method 522, which yields a lower detection limit (0.02 µg/L) than United States Environmental Protection Agency Method 8270D (0.47-0.48 µg/L), which was used for the 2013 samples. The 1,4-dioxane concentrations reported for the 2014 samples are less than Method 8270D detection limits (and hence would not be detected), but above the Method 522 detection limit.
- Polychlorinated biphenyls (PCBs) were analyzed for the first time in surface water using Method 680. Two homologs- (pentachlorobiphenyls and tetrachlorobiphenyls) were detected in seven of 11 samples analyzed for polychlorinated biphenyls. The highest concentrations of tetrachlorobiphenyls were detected near Outfall 005. Pentachlorobiphenyls were detected near Outfalls 006 and 007. All detected PCB concentrations (seven samples) exceed the Biological Technical Advisory Group

ecological criterion and the human health consumption-of-aquatic-organism criterion. The exceedance of the Biological Technical Advisory Group ecological criterion does not imply direct toxicity to ecological receptors; instead, it is a value that is expected to protect against adverse effects from bioaccumulation and food-chain uptake. The human health consumption-of-aquatic-organism criterion is a conservative screening level based on food-chain uptake modeling assuming organisms (fish) stay within the area of exposure. Actual risk to human populations is dependent on site-specific factors like whether the water is used for drinking, which is not the case for Dark Head Cove, and what type and how much fish is consumed and how it is prepared.

- The results of a HHRA conducted assuming that a swimmer is exposed to the polychlorinated biphenyls in the surface waters of Dark Head Cove do not exceed USEPA or MDE risk management benchmarks. The HHRA, conducted in a very conservative (i.e., health protective) manner, concludes that unacceptable risk would not be incurred as a consequence of recreational (swimming) exposure to the PCB concentrations in the surface waters of the Cove.

- The location and magnitude of trichloroethene detections in 2014 are generally consistent with those of 2012 (see Table C-2 in Appendix C). In 2012 and 2014, samples with the highest trichloroethene concentrations were collected near Outfalls 006 and 008 (i.e., the eastern trichloroethene plume discharge area), but the highest trichloroethene concentrations in 2013 were in samples collected near Outfall 005. The 2013 trichloroethene concentrations (1.5-1.9 µg/L) are also two to three times higher than the highest concentrations detected in 2012 (0.66-0.82 µg/L) and 2014 (0.52-0.54 µg/L).

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Section 6
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APPENDIX A—SURFACE WATER SAMPLING LOG SHEETS

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW1A -060914
Sample Location: Cow Pen Creek SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1002								
Depth:	1 foot	Clear	6.38	1.09	22.86	12.02	4.56	0.05	257
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
1,4-Dioxane	<4°C	2 - 1 L Amber Jars	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW2A -060914
Sample Location: Cow Pen Creek SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1013								
Depth:	1 foot	Clear	6.67	1.34	24	11.67	4.46	0.07	224
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
1,4-Dioxane	<4°C	2 - 1 L Amber Jars	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW5A1 -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

Date:	6/9/2014	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Time:	1032	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Depth:	1 foot	Clear	6.87	1.54	24.32	8.29	7.77	0.08	223
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW5A2 -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1041								
Depth:	1 foot	Clear	7.27	1.54	24.48	7.67	7.89	0.08	214
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW6A -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1144								
Depth:	1 foot	Clear	7.89	1.5	25.08	7.72	8.56	0.03	206
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW6B -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1149								
Depth:	1 foot	Clear	7.88	1.51	24.79	6.72	7.45	0.08	203
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4^{0}C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW7A -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1122								
Depth:	1 foot	Clear	7.53	1.5	25.03	9.66	8.66	0.08	214
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW7B -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1126								
Depth:	1 foot	Clear	7.65	1.52	24.91	8.84	8.25	0.08	215
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4^{o}C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW8A -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014								
Time:	1157	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Depth:	1 foot	Clear	8.07	1.51	25.38	6.43	7.2	0.08	203
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW8B -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1202								
Depth:	1 foot	Clear	7.94	1.49	24.88	8.6	8.02	0.07	207
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW9A -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014								
Time:	1132	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Depth:	1 foot	Clear	7.78	1.52	24.95	7.82	7.6	0.08	202
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Frog Mortar Creek, Martin State Airport
Project Number - Task:

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: Tidal creek - estuarine
[] QA Sample Type:

Sample ID No.: MRC-SW9B -060914
Sample Location: Dark Head Cove SW
Sampled By: S.Cameron
C.O.C. No.:

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

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	
Date:	6/9/2014	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	ORP
Time:	1137								
Depth:	1 foot	Clear	7.9	1.5	24.74	7.85	7.85	0.08	200
Method:	Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl pH<2	3 - 40 mL glass vials	Yes
PCBS	<4°C	2 - 1 L Amber Jar	Yes
			Yes

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

APPENDIX B—DATA VALIDATION REPORT

TETRA TECH INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **AUGUST 25, 2014**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC / 1,4-DIOXANE / PCB HOMOLOGS**
LOCKHEED – MIDDLE RIVER CENTER (MRC)
SDG R1404414

SAMPLES: 14 / Aqueous / VOC

MRC-SW1A-060914	MRC-SW2A-060914	MRC-SW5A1-060914
MRC-SW5A2-060914	MRC-SW5B-060914	MRC-SW6A-060914
MRC-SW6B-060914	MRC-SW7A-060914	MRC-SW7B-060914
MRC-SW8A-060914	MRC-SW8B-060914	MRC-SW9A-060914
MRC-SW9B-060914	TB-060914	

2 / Aqueous / 1,4-Dioxane

MRC-SW1A-060914	MRC-SW2A-060914

11 / Aqueous / PCB Homologs

MRC-SW5A1-060914	MRC-SW5A2-060914	MRC-SW5B-060914
MRC-SW6A-060914	MRC-SW6B-060914	MRC-SW7A-060914
MRC-SW7B-060914	MRC-SW8A-060914	MRC-SW8B-060914
MRC-SW9A-060914	MRC-SW9B-060914	

Overview

The sample set for Lockheed – MRC, SDG R1404414 consists of thirteen (13) aqueous environmental samples and one (1) trip blank. The samples were analyzed for volatile organic compounds (VOC), 1,4-dioxane, and polychlorinated biphenyl (PCB) homologs as outlined above.

The samples were collected by Tetra Tech on June 10, 2014 and analyzed by Test America. All analyses were conducted in accordance with SW-846 Methods 8260C, EPA method 522 and 680 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method blank results, surrogate spike recoveries, blank spike/blank spike duplicate results, internal standard recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

- None.

Minor

- The following contaminants were detected in the VOC method and trip blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
1,2,4-Trichlorobenzene[1]	0.30 ug/L	1.5 ug/L
Bromomethane[1]	0.38 ug/L	1.9 ug/L
Naphthalene[1]	0.26 ug/L	1.3 ug/L
Acetone[2]	2.3 ug/L	23 ug/L

1 - Maximum concentration found in preparation blank (RQ1406793-05) affecting all samples.

2 - Maximum concentration found in TB-060914 affecting all samples.

An action level of 10X the maximum contaminant level for acetone; 5X for all other compounds have been used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Detections less than the action level were qualified (U) due to blank contamination.

- The VOC continuing calibration percent differences (%Ds) were greater than the quality control limit of 20% for 2-butanone, tert-butyl alcohol, and acetone for instrument R-MS-12 on 06/19/14 @09:40. The positive and nondetected results for the aforementioned compounds in all samples were qualified as estimated (J) and (UJ), respectively.

- Sample MRC-SW8B-060914 had low surrogate recoveries for gamma-BHC and 4,4'-DDT. The sample was re-extracted 13 days outside the seven day extraction hold time. The re-extracted results were used for validation.

- The continuing calibration %D was greater than the quality control limit of 20% for 1,4-dioxane for instrument R-MS-56 on 06/13/14 @18:04. The positive result for 1,4-dioxane in sample MRC-SW2A-060914 was qualified as estimated (J).

- The laboratory control sample (LCS) RQ1406525-04 had a percent recovery greater than the quality control limit for 1,4-dioxane. The positive results for 1,4-dioxane have been qualified as estimated for samples MRC-SW1A-060914 and MRC-SW2A-060914.

- Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Notes

Sample MRC-SW8B-060914 had low surrogate recoveries for gamma-BHC and 4,4'-DDT. The sample was re-extracted 13 days outside the recommended seven day extraction hold time. The re-extracted results were used for validation but no qualification action was taken for the exceedance of the recommended seven day extraction holding time because PCBs are extremely stable and EPA SW-846 Method 8082 does not require a holding time until extraction.

Nondetected results were reported to the MDL.

Executive Summary

Laboratory Performance: Blank contamination was noted in the VOC fraction. Continuing calibration %D noncompliances resulted in the qualification of VOC and 1,4-dioxane data. LCS/LCSD percent recovery noncompliance resulted in the qualification of 1,4-dioxane data. One PCB sample contained low surrogate recoveries but the sample was re-extracted and the surrogate recoveries improved.

Other Factors Affecting Data Quality: Positive results less than the reporting limit (RL) were qualified as estimated, due to uncertainty near the detection limit. MS/MSD percent recovery noncompliances resulted in the qualification of VOC data.

The data for these analyses were reviewed with reference to USEPA National Functional Guidelines for Organic Data Validation (June 2008). The text of this report has been formulated to address only those problem areas affecting data quality.

For Tetra Tech
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 06247	NSAMPLE	MRC-SW1A-060914			MRC-SW2A-060914			MRC-SW5A1-060914			MRC-SW5A2-060914		
SDG: R1404414	LAB_ID	R1404414-001			R1404414-002			R1404414-003			R1404414-004		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,1-TRICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,1,2,2-TETRACHLOROETHANE		0.25	U		0.25	U		0.25	U		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-DICHLOROETHENE		0.57	U		0.57	U		0.57	U		0.57	U	
1,1-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2,3-TRICHLOROPROPANE		0.7	U		0.7	U		0.7	U		0.7	U	
1,2,4-TRICHLOROBENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
1,2,4-TRIMETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.74	U		0.74	U		0.74	U		0.74	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
1,2-DICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,2-DICHLOROPROPANE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
2,2-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
2-BUTANONE		0.81	UJ	C	0.81	UJ	C	0.81	UJ	C	0.81	UJ	C
2-CHLOROETHYL VINYL ETHER		0.44	U		0.44	U		0.44	U		0.44	U	
2-CHLOROTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
2-HEXANONE		1.7	U		1.7	U		1.7	U		1.7	U	
4-CHLOROTOLUENE		0.24	U		0.24	U		0.24	U		0.24	U	
4-ISOPROPYLTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
4-METHYL-2-PENTANONE		0.67	U		0.67	U		0.67	U		0.67	U	
ACETONE		2.8	U	A	1.9	U	A	1.6	U	A	1.6	U	A
BENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
BROMOBENZENE		0.28	U		0.28	U		0.28	U		0.28	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMOFORM		0.42	U		0.42	U		0.42	U		0.42	U	
BROMOMETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
CARBON DISULFIDE		0.22	U		0.22	U		0.24	J	P	0.22	U	
CARBON TETRACHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW5B-060914			MRC-SW6A-060914			MRC-SW6B-060914			MRC-SW7A-060914		
SDG: R1404414	LAB_ID	R1404414-005			R1404414-006			R1404414-007			R1404414-008		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.22	U		0.22	U		0.22	U		0.22	U	
1,1,1-TRICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,1,2,2-TETRACHLOROETHANE		0.25	U		0.25	U		0.25	U		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
1,1-DICHLOROETHENE		0.57	U		0.57	U		0.57	U		0.57	U	
1,1-DICHLOROPROPENE		0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.82	U		0.82	U		0.82	U		0.82	U	
1,2,3-TRICHLOROPROPANE		0.7	U		0.7	U		0.7	U		0.7	U	
1,2,4-TRICHLOROBENZENE		0.23	U		0.23	U		0.23	U		0.23	U	
1,2,4-TRIMETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.74	U		0.74	U		0.74	U		0.74	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
1,2-DICHLOROETHANE		0.36	U		0.36	U		0.36	U		0.36	U	
1,2-DICHLOROPROPANE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DICHLOROBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
2,2-DICHLOROPROPANE		0.27	U		0.27	U		0.27	U		0.27	U	
2-BUTANONE		0.81	UJ	C	0.81	UJ	C	0.81	UJ	C	0.81	UJ	C
2-CHLOROETHYL VINYL ETHER		0.44	U		0.44	U		0.44	U		0.44	U	
2-CHLOROTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
2-HEXANONE		1.7	U		1.7	U		1.7	U		1.7	U	
4-CHLOROTOLUENE		0.24	U		0.24	U		0.24	U		0.24	U	
4-ISOPROPYLTOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
4-METHYL-2-PENTANONE		0.67	U		0.67	U		0.67	U		0.67	U	
ACETONE		1.3	U	A	1.6	U	A	1.6	U	A	1.3	UJ	C
BENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
BROMOBENZENE		0.28	U		0.28	U		0.28	U		0.28	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
BROMOFORM		0.42	U		0.42	U		0.42	U		0.42	U	
BROMOMETHANE		0.29	U		0.29	U		0.29	U		0.29	U	
CARBON DISULFIDE		0.22	U		0.22	U		0.22	U		0.22	U	
CARBON TETRACHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW7B-060914			MRC-SW8A-060914			MRC-SW8B-060914			MRC-SW9A-060914		
SDG: R1404414	LAB_ID	R1404414-009			R1404414-010			R1404414-011			R1404414-012		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE	0.22	U		0.22	U		0.22	U		0.22	U	
1,1,1-TRICHLOROETHANE	0.36	U		0.36	U		0.36	U		0.36	U	
1,1,2,2-TETRACHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31	U		0.31	U		0.31	U		0.31	U	
1,1-DICHLOROETHANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,1-DICHLOROETHENE	0.57	U		0.57	U		0.57	U		0.57	U	
1,1-DICHLOROPROPENE	0.29	U		0.29	U		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE	0.82	U		0.82	U		0.82	U		0.82	U	
1,2,3-TRICHLOROPROPANE	0.7	U		0.7	U		0.7	U		0.7	U	
1,2,4-TRICHLOROBENZENE	0.23	U		0.23	U		0.23	U		0.23	U	
1,2,4-TRIMETHYLBENZENE	0.2	U		0.2	U		0.2	U		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE	0.74	U		0.74	U		0.74	U		0.74	U	
1,2-DIBROMOETHANE	0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROBENZENE	0.21	U		0.21	U		0.21	U		0.21	U	
1,2-DICHLOROETHANE	0.36	U		0.36	U		0.36	U		0.36	U	
1,2-DICHLOROPROPANE	0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROBENZENE	0.2	U		0.2	U		0.2	U		0.2	U	
1,3-DICHLOROPROPANE	0.27	U		0.27	U		0.27	U		0.27	U	
1,4-DICHLOROBENZENE	0.2	U		0.2	U		0.2	U		0.2	U	
2,2-DICHLOROPROPANE	0.27	U		0.27	U		0.27	U		0.27	U	
2-BUTANONE	0.81	UJ	C	0.81	UJ	C	0.81	UJ	C	0.81	UJ	C
2-CHLOROETHYL VINYL ETHER	0.44	U		0.44	U		0.44	U		0.44	U	
2-CHLOROTOLUENE	0.2	U		0.2	U		0.2	U		0.2	U	
2-HEXANONE	1.7	U		1.7	U		1.7	U		1.7	U	
4-CHLOROTOLUENE	0.24	U		0.24	U		0.24	U		0.24	U	
4-ISOPROPYLTOLUENE	0.2	U		0.2	U		0.2	U		0.2	U	
4-METHYL-2-PENTANONE	0.67	U		0.67	U		0.67	U		0.67	U	
ACETONE	1.4	U	A	1.8	U	A	1.5	U	A	1.3	UJ	C
BENZENE	0.2	U		0.2	U		0.2	U		0.2	U	
BROMOBENZENE	0.28	U		0.28	U		0.28	U		0.28	U	
BROMOCHLOROMETHANE	0.32	U		0.32	U		0.32	U		0.32	U	
BROMODICHLOROMETHANE	0.32	U		0.32	U		0.32	U		0.32	U	
BROMOFORM	0.42	U		0.42	U		0.42	U		0.42	U	
BROMOMETHANE	0.29	U		0.29	U		0.29	U		0.29	U	
CARBON DISULFIDE	0.22	U		0.22	U		0.22	U		0.22	U	
CARBON TETRACHLORIDE	0.45	U		0.45	U		0.45	U		0.45	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW9B-060914			TB-060914		
SDG: R1404414	LAB_ID	R1404414-013			R1404414-014		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1,2-TETRACHLOROETHANE		0.22	U		0.22	U	
1,1,1-TRICHLOROETHANE		0.36	U		0.36	U	
1,1,2,2-TETRACHLOROETHANE		0.25	U		0.25	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		0.31	U		0.31	U	
1,1-DICHLOROETHANE		0.2	U		0.2	U	
1,1-DICHLOROETHENE		0.57	U		0.57	U	
1,1-DICHLOROPROPENE		0.29	U		0.29	U	
1,2,3-TRICHLOROBENZENE		0.82	U		0.82	U	
1,2,3-TRICHLOROPROPANE		0.7	U		0.7	U	
1,2,4-TRICHLOROBENZENE		0.23	U		0.23	U	
1,2,4-TRIMETHYLBENZENE		0.2	U		0.2	U	
1,2-DIBROMO-3-CHLOROPROPANE		0.74	U		0.74	U	
1,2-DIBROMOETHANE		0.24	U		0.24	U	
1,2-DICHLOROBENZENE		0.21	U		0.21	U	
1,2-DICHLOROETHANE		0.36	U		0.36	U	
1,2-DICHLOROPROPANE		0.2	U		0.2	U	
1,3-DICHLOROBENZENE		0.2	U		0.2	U	
1,3-DICHLOROPROPANE		0.27	U		0.27	U	
1,4-DICHLOROBENZENE		0.2	U		0.2	U	
2,2-DICHLOROPROPANE		0.27	U		0.27	U	
2-BUTANONE		0.81	UJ	C	0.81	UJ	C
2-CHLOROETHYL VINYL ETHER		0.44	U		0.44	U	
2-CHLOROTOLUENE		0.2	U		0.2	U	
2-HEXANONE		1.7	U		1.7	U	
4-CHLOROTOLUENE		0.24	U		0.24	U	
4-ISOPROPYLTOLUENE		0.2	U		0.2	U	
4-METHYL-2-PENTANONE		0.67	U		0.67	U	
ACETONE		1.5	U	A	2.3	J	CP
BENZENE		0.2	U		0.2	U	
BROMOBENZENE		0.28	U		0.28	U	
BROMOCHLOROMETHANE		0.32	U		0.32	U	
BROMODICHLOROMETHANE		0.32	U		0.32	U	
BROMOFORM		0.42	U		0.42	U	
BROMOMETHANE		0.29	U		0.29	U	
CARBON DISULFIDE		0.22	U		0.22	U	
CARBON TETRACHLORIDE		0.45	U		0.45	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW1A-060914			MRC-SW2A-060914			MRC-SW5A1-060914			MRC-SW5A2-060914		
SDG: R1404414	LAB_ID	R1404414-001			R1404414-002			R1404414-003			R1404414-004		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHLOROBENZENE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLORODIBROMOMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
CHLOROFORM		0.25	U		0.25	U		0.25	U		0.25	U	
CHLOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U		0.24	U		0.24	U		0.24	U	
DIBROMOMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U		0.46	U		0.46	U		0.46	U	
DIISOPROPYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
HEXACHLOROBUTADIENE		0.62	U		0.62	U		0.62	U		0.62	U	
ISOPROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
M+P-XYLENES		0.33	U		0.33	U		0.33	U		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U		0.29	U		0.29	U		0.29	U	
METHYLENE CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	
NAPHTHALENE		0.2	U		0.2	U		0.2	U		0.2	U	
N-BUTYLBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
N-PROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
O-XYLENE		0.2	U		0.2	U		0.2	U		0.2	U	
SEC-BUTYLBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
STYRENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-BUTYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	UJ	C	11	UJ	C	11	UJ	C	11	UJ	C
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
TOTAL XYLENES		0.53	U		0.53	U		0.53	U		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U		0.33	U		0.33	U		0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE		0.22	U		0.22	U		0.22	U		0.3	J	P
TRICHLOROFLUOROMETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
VINYL ACETATE		1.1	U		1.1	U		1.1	U		1.1	U	
VINYL CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW5B-060914			MRC-SW6A-060914			MRC-SW6B-060914			MRC-SW7A-060914		
SDG: R1404414	LAB_ID	R1404414-005			R1404414-006			R1404414-007			R1404414-008		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHLOROBENZENE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLORODIBROMOMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
CHLOROFORM		0.25	U		0.25	U		0.25	U		0.25	U	
CHLOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U		0.24	U		0.24	U		0.24	U	
DIBROMOMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U		0.46	U		0.46	U		0.46	U	
DIISOPROPYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
HEXACHLOROBUTADIENE		0.62	U		0.62	U		0.62	U		0.62	U	
ISOPROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
M+P-XYLENES		0.33	U		0.33	U		0.33	U		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U		0.29	U		0.29	U		0.29	U	
METHYLENE CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	
NAPHTHALENE		0.2	U		0.2	U		0.2	U		0.2	U	
N-BUTYLBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
N-PROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
O-XYLENE		0.2	U		0.2	U		0.2	U		0.2	U	
SEC-BUTYLBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
STYRENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-BUTYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	UJ	C	11	UJ	C	11	UJ	C	11	UJ	C
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
TOTAL XYLENES		0.53	U		0.53	U		0.53	U		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U		0.33	U		0.33	U		0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE		0.22	U		0.52	J	P	0.39	J	P	0.44	J	P
TRICHLOROFLUOROMETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
VINYL ACETATE		1.1	U		1.1	U		1.1	U		1.1	U	
VINYL CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW7B-060914			MRC-SW8A-060914			MRC-SW8B-060914			MRC-SW9A-060914		
SDG: R1404414	LAB_ID	R1404414-009			R1404414-010			R1404414-011			R1404414-012		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHLOROBENZENE		0.29	U		0.29	U		0.29	U		0.29	U	
CHLORODIBROMOMETHANE		0.31	U		0.31	U		0.31	U		0.31	U	
CHLOROETHANE		0.24	U		0.24	U		0.24	U		0.24	U	
CHLOROFORM		0.25	U		0.25	U		0.25	U		0.25	U	
CHLOROMETHANE		0.21	U		0.21	U		0.21	U		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U		0.24	U		0.24	U		0.24	U	
DIBROMOMETHANE		0.32	U		0.32	U		0.32	U		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U		0.46	U		0.46	U		0.46	U	
DIISOPROPYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
ETHYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
HEXACHLOROBUTADIENE		0.62	U		0.62	U		0.62	U		0.62	U	
ISOPROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
M+P-XYLENES		0.33	U		0.33	U		0.33	U		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U		0.29	U		0.29	U		0.29	U	
METHYLENE CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	
NAPHTHALENE		0.2	U		0.2	U		0.2	U		0.2	U	
N-BUTYLBENZENE		0.21	U		0.21	U		0.21	U		0.21	U	
N-PROPYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
O-XYLENE		0.2	U		0.2	U		0.2	U		0.2	U	
SEC-BUTYLBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
STYRENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U		0.2	U		0.2	U		0.2	U	
TERT-BUTYLBENZENE		0.2	U		0.2	U		0.2	U		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	UJ	C	11	UJ	C	11	UJ	C	11	UJ	C
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.2	U		0.2	U		0.2	U		0.2	U	
TOTAL XYLENES		0.53	U		0.53	U		0.53	U		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U		0.33	U		0.33	U		0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U		0.2	U		0.2	U	
TRICHLOROETHENE		0.49	J	P	0.54	J	P	0.47	J	P	0.45	J	P
TRICHLOROFLUOROMETHANE		0.2	U		0.2	U		0.2	U		0.2	U	
VINYL ACETATE		1.1	U		1.1	U		1.1	U		1.1	U	
VINYL CHLORIDE		0.32	U		0.32	U		0.32	U		0.32	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW9B-060914			TB-060914		
SDG: R1404414	LAB_ID	R1404414-013			R1404414-014		
FRACTION: OV	SAMP_DATE	6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHLOROBENZENE		0.29	U		0.29	U	
CHLORODIBROMOMETHANE		0.31	U		0.31	U	
CHLOROETHANE		0.24	U		0.24	U	
CHLOROFORM		0.25	U		0.25	U	
CHLOROMETHANE		0.21	U		0.21	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U	
CIS-1,3-DICHLOROPROPENE		0.24	U		0.24	U	
DIBROMOMETHANE		0.32	U		0.32	U	
DICHLORODIFLUOROMETHANE		0.46	U		0.46	U	
DIISOPROPYL ETHER		0.2	U		0.2	U	
ETHYL TERT-BUTYL ETHER		0.2	U		0.2	U	
ETHYLBENZENE		0.2	U		0.2	U	
HEXACHLOROBUTADIENE		0.62	U		0.62	U	
ISOPROPYLBENZENE		0.2	U		0.2	U	
M+P-XYLENES		0.33	U		0.33	U	
METHYL TERT-BUTYL ETHER		0.29	U		0.29	U	
METHYLENE CHLORIDE		0.32	U		0.32	U	
NAPHTHALENE		0.2	U		0.2	U	
N-BUTYLBENZENE		0.21	U		0.21	U	
N-PROPYLBENZENE		0.2	U		0.2	U	
O-XYLENE		0.2	U		0.2	U	
SEC-BUTYLBENZENE		0.27	U		0.27	U	
STYRENE		0.2	U		0.2	U	
TERT-AMYL METHYL ETHER		0.2	U		0.2	U	
TERT-BUTYLBENZENE		0.2	U		0.2	U	
TERTIARY-BUTYL ALCOHOL		11	UJ	C	11	UJ	C
TETRACHLOROETHENE		0.3	U		0.3	U	
TOLUENE		0.2	U		0.2	U	
TOTAL XYLENES		0.53	U		0.53	U	
TRANS-1,2-DICHLOROETHENE		0.33	U		0.33	U	
TRANS-1,3-DICHLOROPROPENE		0.2	U		0.2	U	
TRICHLOROETHENE		0.47	J	P	0.22	U	
TRICHLOROFLUOROMETHANE		0.2	U		0.2	U	
VINYL ACETATE		1.1	U		1.1	U	
VINYL CHLORIDE		0.32	U		0.32	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW5A1-060914			MRC-SW5A2-060914			MRC-SW5B-060914			MRC-SW6A-060914		
SDG: R1404414	LAB_ID	R1404414-003			R1404414-004			R1404414-005			R1404414-006		
FRACTION: PCB	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DECACHLOROBIPHENYL		0.018	U		0.022	U		0.018	U		0.018	U	
DICHLOROBIPHENYLS		0.0044	U		0.0054	U		0.0044	U		0.0044	U	
HEPTACHLOROBIPHENYLS		0.011	U		0.014	U		0.011	U		0.011	U	
HEXACHLOROBIPHENYL		0.01	U		0.013	U		0.01	U		0.01	U	
NONACHLOROBIPHENYLS		0.019	U		0.024	U		0.019	U		0.019	U	
OCTACHLOROBIPHENYLS		0.0084	U		0.011	U		0.0084	U		0.0084	U	
PENTACHLOROBIPHENYLS		0.0088	U		0.011	U		0.0088	U		0.0088	U	
TETRACHLOROBIPHENYLS		0.011			0.024			0.016			0.0054	J	P
TOTAL MONOCHLOROBIPHENYLS		0.0017	U		0.0021	U		0.0017	U		0.0017	U	
TRICHLOROBIPHENYLS		0.0034	U		0.0042	U		0.0034	U		0.0034	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW6B-060914			MRC-SW7A-060914			MRC-SW7B-060914			MRC-SW8A-060914		
SDG: R1404414	LAB_ID	R1404414-007			R1404414-008			R1404414-009			R1404414-010		
FRACTION: PCB	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DECACHLOROBIPHENYL		0.018	U		0.018	U		0.018	U		0.018	U	
DICHLOROBIPHENYLS		0.0044	U		0.0044	U		0.0044	U		0.0044	U	
HEPTACHLOROBIPHENYLS		0.011	U		0.011	U		0.011	U		0.011	U	
HEXACHLOROBIPHENYL		0.01	U		0.01	U		0.01	U		0.01	U	
NONACHLOROBIPHENYLS		0.019	U		0.019	U		0.019	U		0.019	U	
OCTACHLOROBIPHENYLS		0.0084	U		0.0084	U		0.0084	U		0.0084	U	
PENTACHLOROBIPHENYLS		0.015			0.012			0.0088	U		0.0088	U	
TETRACHLOROBIPHENYLS		0.0054	J	P	0.0054	U		0.0054	U		0.0054	J	P
TOTAL MONOCHLOROBIPHENYLS		0.0017	U		0.0017	U		0.0017	U		0.0017	U	
TRICHLOROBIPHENYLS		0.0034	U		0.0034	U		0.0034	U		0.0034	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW8B-060914			MRC-SW8B-060914A			MRC-SW9A-060914			MRC-SW9B-060914		
SDG: R1404414	LAB_ID	R1404414-011			R1404414-011			R1404414-012			R1404414-013		
FRACTION: PCB	SAMP_DATE	6/10/2014			6/10/2014			6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DECACHLOROBIPHENYL		0.018	U					0.018	U		0.018	U	
DICHLOROBIPHENYLS		0.0044	U					0.0044	U		0.0044	U	
HEPTACHLOROBIPHENYLS		0.011	U					0.011	U		0.011	U	
HEXACHLOROBIPHENYL		0.01	U					0.01	U		0.01	U	
NONACHLOROBIPHENYLS		0.019	U					0.019	U		0.019	U	
OCTACHLOROBIPHENYLS		0.0084	U					0.0084	U		0.0084	U	
PENTACHLOROBIPHENYLS					0.0088	U		0.0088	U		0.0088	U	
TETRACHLOROBIPHENYLS		0.0054	U					0.0054	U		0.0054	U	
TOTAL MONOCHLOROBIPHENYLS		0.0017	U					0.0017	U		0.0017	U	
TRICHLOROBIPHENYLS					0.0034	U		0.0034	U		0.0034	U	

PROJ_NO: 06247	NSAMPLE	MRC-SW1A-060914			MRC-SW2A-060914		
SDG: R1404414	LAB_ID	R1404414-001			R1404414-002		
FRACTION: OS	SAMP_DATE	6/10/2014			6/10/2014		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,4-DIOXANE		0.235	J	E	0.156	J	CEP

Appendix B

Results as Reported by the Laboratory

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1002
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 15:02
Sample Name:	MRC-SW1A-060914	**Units:**	µg/L
Lab Code:	R1404414-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6692.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	**2.8**	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Collected: 6/10/14 1002
Date Received: 6/11/14
Date Analyzed: 6/19/14 15:02

Sample Name: MRC-SW1A-060914
Lab Code: R1404414-001

Units: µg/L
Basis: NA

Volatile Organic Compounds by GC/MS

Analytical Method: 8260C
Data File Name: I:\ACQUDATA\msvoa12\Data\061914\M6692.D\

Analysis Lot: 397695
Instrument Name: R-MS-12
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1002
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 15:02
Sample Name:	MRC-SW1A-060914	**Units:**	µg/L
Lab Code:	R1404414-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6692.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	102	85-122	6/19/14 15:02	
Dibromofluoromethane	104	89-119	6/19/14 15:02	
Toluene-d8	101	87-121	6/19/14 15:02	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1013
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 15:34
Sample Name:	MRC-SW2A-060914	**Units:**	µg/L
Lab Code:	R1404414-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6693.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	**1.9**	**J**	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1013
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 15:34
Sample Name:	MRC-SW2A-060914	**Units:**	µg/L
Lab Code:	R1404414-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6693.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1013
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 15:34
Sample Name:	MRC-SW2A-060914	**Units:**	µg/L
Lab Code:	R1404414-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6693.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	99	85-122	6/19/14 15:34	
Dibromofluoromethane	103	89-119	6/19/14 15:34	
Toluene-d8	101	87-121	6/19/14 15:34	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1032
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 16:06
Sample Name:	MRC-SW5A1-060914	**Units:**	µg/L
Lab Code:	R1404414-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6694.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.6	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Collected: 6/10/14 1032
Date Received: 6/11/14
Date Analyzed: 6/19/14 16:06

Sample Name: MRC-SW5A1-060914
Lab Code: R1404414-003

Units: µg/L
Basis: NA

Volatile Organic Compounds by GC/MS

Analytical Method: 8260C
Data File Name: I:\ACQUDATA\msvoa12\Data\061914\M6694.D\

Analysis Lot: 397695
Instrument Name: R-MS-12
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	0.24	J	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1032
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 16:06
Sample Name:	MRC-SW5A1-060914	**Units:**	µg/L
Lab Code:	R1404414-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6694.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 16:06	
Dibromofluoromethane	104	89-119	6/19/14 16:06	
Toluene-d8	101	87-121	6/19/14 16:06	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 1121CO6247
Sample Matrix: Water

Service Request: R1404414
Date Collected: 6/10/14 1041
Date Received: 6/11/14
Date Analyzed: 6/19/14 16:39

Sample Name: MRC-SW5A2-060914
Lab Code: R1404414-004

Units: µg/L
Basis: NA

Volatile Organic Compounds by GC/MS

Analytical Method: 8260C
Data File Name: I:\ACQUDATA\msvoa12\Data\061914\M6695.D\

Analysis Lot: 397695
Instrument Name: R-MS-12
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.6	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1041
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 16:39
Sample Name:	MRC-SW5A2-060914	**Units:**	µg/L
Lab Code:	R1404414-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6695.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.30**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1041
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 16:39
Sample Name:	MRC-SW5A2-060914	**Units:**	µg/L
Lab Code:	R1404414-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6695.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 16:39	
Dibromofluoromethane	105	89-119	6/19/14 16:39	
Toluene-d8	102	87-121	6/19/14 16:39	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1049
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 17:11
Sample Name:	MRC-SW5B-060914	**Units:**	µg/L
Lab Code:	R1404414-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6696.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.3	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Collected: 6/10/14 1049
Date Received: 6/11/14
Date Analyzed: 6/19/14 17:11

Sample Name: MRC-SW5B-060914
Lab Code: R1404414-005

Units: µg/L
Basis: NA

Volatile Organic Compounds by GC/MS

Analytical Method: 8260C
Data File Name: I:\ACQUDATA\msvoa12\Data\061914\M6696.D\

Analysis Lot: 397695
Instrument Name: R-MS-12
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1049
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 17:11
Sample Name:	MRC-SW5B-060914	**Units:**	µg/L
Lab Code:	R1404414-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6696.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	99	85-122	6/19/14 17:11	
Dibromofluoromethane	102	89-119	6/19/14 17:11	
Toluene-d8	100	87-121	6/19/14 17:11	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1144
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 17:44
Sample Name:	MRC-SW6A-060914	**Units:**	µg/L
Lab Code:	R1404414-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6697.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.6	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1144
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 17:44
Sample Name:	MRC-SW6A-060914	**Units:**	µg/L
Lab Code:	R1404414-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6697.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.52**	**J**	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1144
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 17:44
Sample Name:	MRC-SW6A-060914	**Units:**	µg/L
Lab Code:	R1404414-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6697.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 17:44	
Dibromofluoromethane	104	89-119	6/19/14 17:44	
Toluene-d8	102	87-121	6/19/14 17:44	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1149
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:16
Sample Name:	MRC-SW6B-060914	**Units:**	µg/L
Lab Code:	R1404414-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6698.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.6	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1149
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:16
Sample Name:	MRC-SW6B-060914	**Units:**	µg/L
Lab Code:	R1404414-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6698.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	0.39	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1149
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:16
Sample Name:	MRC-SW6B-060914	**Units:**	µg/L
Lab Code:	R1404414-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6698.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	102	85-122	6/19/14 18:16	
Dibromofluoromethane	103	89-119	6/19/14 18:16	
Toluene-d8	101	87-121	6/19/14 18:16	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1122
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:48
Sample Name:	MRC-SW7A-060914	**Units:**	µg/L
Lab Code:	R1404414-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6699.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	5.0	U	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1122
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:48
Sample Name:	MRC-SW7A-060914	**Units:**	µg/L
Lab Code:	R1404414-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6699.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.44**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1122
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 18:48
Sample Name:	MRC-SW7A-060914	**Units:**	µg/L
Lab Code:	R1404414-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6699.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	102	85-122	6/19/14 18:48	
Dibromofluoromethane	104	89-119	6/19/14 18:48	
Toluene-d8	102	87-121	6/19/14 18:48	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1126
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:20
Sample Name:	MRC-SW7B-060914	**Units:**	µg/L
Lab Code:	R1404414-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6700.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.4	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1126
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:20
Sample Name:	MRC-SW7B-060914	**Units:**	µg/L
Lab Code:	R1404414-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6700.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.49**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1126
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:20
Sample Name:	MRC-SW7B-060914	**Units:**	µg/L
Lab Code:	R1404414-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6700.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	100	85-122	6/19/14 19:20	
Dibromofluoromethane	102	89-119	6/19/14 19:20	
Toluene-d8	101	87-121	6/19/14 19:20	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1157
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:53
Sample Name:	MRC-SW8A-060914	**Units:**	µg/L
Lab Code:	R1404414-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6701.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	1.8	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1157
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:53
Sample Name:	MRC-SW8A-060914	**Units:**	µg/L
Lab Code:	R1404414-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6701.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.54**	**J**	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1157
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 19:53
Sample Name:	MRC-SW8A-060914	**Units:**	µg/L
Lab Code:	R1404414-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6701.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	100	85-122	6/19/14 19:53	
Dibromofluoromethane	103	89-119	6/19/14 19:53	
Toluene-d8	101	87-121	6/19/14 19:53	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1202
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:25
Sample Name:	MRC-SW8B-060914	**Units:**	µg/L
Lab Code:	R1404414-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6702.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	**1.5**	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1202
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:25
Sample Name:	MRC-SW8B-060914	**Units:**	µg/L
Lab Code:	R1404414-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6702.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.47**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1202
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:25
Sample Name:	MRC-SW8B-060914	**Units:**	µg/L
Lab Code:	R1404414-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6702.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 20:25	
Dibromofluoromethane	102	89-119	6/19/14 20:25	
Toluene-d8	101	87-121	6/19/14 20:25	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1132
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 14:29
Sample Name:	MRC-SW9A-060914	**Units:**	µg/L
Lab Code:	R1404414-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6691.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	5.0	U	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1132
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 14:29
Sample Name:	MRC-SW9A-060914	**Units:**	µg/L
Lab Code:	R1404414-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6691.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.45**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1132
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 14:29
Sample Name:	MRC-SW9A-060914	**Units:**	µg/L
Lab Code:	R1404414-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6691.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 14:29	
Dibromofluoromethane	102	89-119	6/19/14 14:29	
Toluene-d8	101	87-121	6/19/14 14:29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1137
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:57
Sample Name:	MRC-SW9B-060914	**Units:**	µg/L
Lab Code:	R1404414-013	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6703.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	**1.5**	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1137
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:57
Sample Name:	MRC-SW9B-060914	**Units:**	µg/L
Lab Code:	R1404414-013	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6703.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	**0.47**	J	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1137
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 20:57
Sample Name:	MRC-SW9B-060914	**Units:**	µg/L
Lab Code:	R1404414-013	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6703.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	100	85-122	6/19/14 20:57	
Dibromofluoromethane	103	89-119	6/19/14 20:57	
Toluene-d8	101	87-121	6/19/14 20:57	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 13:58
Sample Name:	TB-060914	**Units:**	µg/L
Lab Code:	R1404414-014	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6690.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	**2.3**	J	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	1.0	U	1.0	0.29	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 13:58
Sample Name:	TB-060914	**Units:**	µg/L
Lab Code:	R1404414-014	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6690.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	1.0	U	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Analyzed:	6/19/14 13:58
Sample Name:	TB-060914	**Units:**	µg/L
Lab Code:	R1404414-014	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6690.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 13:58	
Dibromofluoromethane	104	89-119	6/19/14 13:58	
Toluene-d8	100	87-121	6/19/14 13:58	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1032
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/23/14 19:55
Sample Name:	MRC-SW5A1-060914	**Units:**	µg/L
Lab Code:	R1404414-003	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	398720
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062314\DK259.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0049	U	0.0049	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0049	U	0.0049	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0049	U	0.0049	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.011**		0.0098	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0098	U	0.0098	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.015	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.015	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.020	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.025	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	81	63-119	6/23/14 19:55	
4,4'-DDT	64	62-181	6/23/14 19:55	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1041
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 10:48
Sample Name:	MRC-SW5A2-060914	**Units:**	µg/L
Lab Code:	R1404414-004	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK268.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0061	U	0.0061	0.0021	
25512-42-9	Dichlorobiphenyls, Total	0.0061	U	0.0061	0.0054	
25323-68-6	Trichlorobiphenyls, Total	0.0061	U	0.0061	0.0042	
26914-33-0	Tetrachlorobiphenyls, Total	**0.024**		0.012	0.0066	
25429-29-2	Pentachlorobiphenyls, Total	0.012	U	0.012	0.011	
26601-64-9	Hexachlorobiphenyls, Total	0.013	U	0.013	0.013	
28655-71-2	Heptachlorobiphenyls, Total	0.018	U	0.018	0.014	
55722-26-4	Octachlorobiphenyls, Total	0.018	U	0.018	0.011	
53742-07-7	Nonachlorobiphenyls, Total	0.024	U	0.024	0.024	
2051-24-3	Decachlorobiphenyls, Total	0.030	U	0.030	0.022	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	81	63-119	6/24/14 10:48	
4,4'-DDT	72	62-181	6/24/14 10:48	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1049
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 11:17
Sample Name:	MRC-SW5B-060914	**Units:**	µg/L
Lab Code:	R1404414-005	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK269.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0048	U	0.0048	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0048	U	0.0048	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0048	U	0.0048	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.016**		0.0096	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0096	U	0.0096	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	94	63-119	6/24/14 11:17	
4,4'-DDT	73	62-181	6/24/14 11:17	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1144
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 12:44
Sample Name:	MRC-SW6A-060914	**Units:**	µg/L
Lab Code:	R1404414-006	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK272.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.0066**	J	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	89	63-119	6/24/14 12:44	
4,4'-DDT	74	62-181	6/24/14 12:44	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1149
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/23/14 20:54
Sample Name:	MRC-SW6B-060914	**Units:**	µg/L
Lab Code:	R1404414-007	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	398720
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062314\DK261.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.0071**	J	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	**0.015**		0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	94	63-119	6/23/14 20:54	
4,4'-DDT	83	62-181	6/23/14 20:54	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1122
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 13:14
Sample Name:	MRC-SW7A-060914	**Units:**	µg/L
Lab Code:	R1404414-008	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK273.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0050	U	0.0050	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0050	U	0.0050	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0050	U	0.0050	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.010	U	0.010	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	**0.012**		0.010	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.015	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.015	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.020	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.025	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	97	63-119	6/24/14 13:14	
4,4'-DDT	67	62-181	6/24/14 13:14	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1126
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 14:42
Sample Name:	MRC-SW7B-060914	**Units:**	µg/L
Lab Code:	R1404414-009	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK276.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	96	63-119	6/24/14 14:42	
4,4'-DDT	65	62-181	6/24/14 14:42	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1157
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/24/14 15:12
Sample Name:	MRC-SW8A-060914	**Units:**	µg/L
Lab Code:	R1404414-010	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399144
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062414\DK277.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.0066**	J	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	92	63-119	6/24/14 15:12	
4,4'-DDT	68	62-181	6/24/14 15:12	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	6/10/14 1202
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/25/14 15:50
Sample Name:	MRC-SW8B-060914	**Units:**	µg/L
Lab Code:	R1404414-011	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399147
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062514\DK296.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	**0.0061**		0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	**0.0061**	J	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	**0.018**		0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec		Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	37	*	63-119	6/25/14 15:50	
4,4'-DDT	36	*	62-181	6/25/14 15:50	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1202
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/30/14
		Date Analyzed:	7/1/14 11:52
Sample Name:	MRC-SW8B-060914	**Units:**	µg/L
Lab Code:	R1404414-011	**Basis:**	NA
Run Type:	Reanalysis		

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399987
Prep Method:	EPA 3510C	**Extraction Lot:**	211949
Data File Name:	I:\ACQUDATA\5973B\DATA\070114\DK311.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	*
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	*
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	*
26914-33-0	Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	*
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	*
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	*
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	*
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	*
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	*
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	*

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	88	63-119	7/1/14 11:52	
4,4'-DDT	73	62-181	7/1/14 11:52	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1132
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/25/14 17:47
Sample Name:	MRC-SW9A-060914	**Units:**	µg/L
Lab Code:	R1404414-012	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399147
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062514\DK300.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	89	63-119	6/25/14 17:47	
4,4'-DDT	74	62-181	6/25/14 17:47	

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1137
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/25/14 16:19
Sample Name:	MRC-SW9B-060914	**Units:**	µg/L
Lab Code:	R1404414-013	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399147
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062514\DK297.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.024	U	0.024	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	95	63-119	6/25/14 16:19	
4,4'-DDT	105	62-181	6/25/14 16:19	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1002
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/13/14 14:39
Sample Name:	MRC-SW1A-060914	**Units:**	µg/L
Lab Code:	R1404414-001	**Basis:**	As Received

1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Analytical Method:	522	**Analysis Lot:**	397133
Prep Method:	Method	**Extraction Lot:**	210544
Data File Name:	I:\ACQUDATA\5975E\data\061314\Af949.D\	**Instrument Name:**	R-MS-56
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
123-91-1	1,4-Dioxane	**0.235**		0.200	0.0200	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	92	70-130	6/13/14 14:39	

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Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	6/10/14 1013
Sample Matrix:	Water	**Date Received:**	6/11/14
		Date Extracted:	6/13/14
		Date Analyzed:	6/13/14 15:16
Sample Name:	MRC-SW2A-060914	**Units:**	µg/L
Lab Code:	R1404414-002	**Basis:**	As Received

1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Analytical Method:	522	**Analysis Lot:**	397133
Prep Method:	Method	**Extraction Lot:**	210544
Data File Name:	I:\ACQUDATA\5975E\data\061314\Af951.D\	**Instrument Name:**	R-MS-56
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
123-91-1	1,4-Dioxane	**0.156**	J	0.200	0.0200	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	96	70-130	6/13/14 15:16	

Appendix C

Support Documentation

HOLDTIME

SDG R1404414

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
	PERCENT	MRC-SW7A-060914	R1404414-008	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	PERCENT	MRC-SW9B-060914	R1404414-013	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	PERCENT	MRC-SW8B-060914	R1404414-011	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	PERCENT	MRC-SW7B-060914	R1404414-009	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	PERCENT	MRC-SW9A-060914	R1404414-012	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	PERCENT	MRC-SW6B-060914	R1404414-007	NM	06/10/2014	06/13/2014	06/23/2014	3	10	13
	PERCENT	MRC-SW6A-060914	R1404414-006	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	PERCENT	MRC-SW5B-060914	R1404414-005	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	PERCENT	MRC-SW5A2-060914	R1404414-004	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	PERCENT	MRC-SW5A1-060914	R1404414-003	NM	06/10/2014	06/13/2014	06/23/2014	3	10	13
	PERCENT	MRC-SW8A-060914	R1404414-010	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW5B-060914	R1404414-005	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW8A-060914	R1404414-010	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW7B-060914	R1404414-009	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW7A-060914	R1404414-008	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
	UG/L	MRC-SW6B-060914	R1404414-007	NM	06/10/2014	06/13/2014	06/23/2014	3	10	13
	UG/L	MRC-SW6A-060914	R1404414-006	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW5A2-060914	R1404414-004	NM	06/10/2014	06/13/2014	06/24/2014	3	11	14
	UG/L	MRC-SW5A1-060914	R1404414-003	NM	06/10/2014	06/13/2014	06/23/2014	3	10	13
	UG/L	MRC-SW9A-060914	R1404414-012	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	UG/L	MRC-SW8B-060914	R1404414-011	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	UG/L	MRC-SW9B-060914	R1404414-013	NM	06/10/2014	06/13/2014	06/25/2014	3	12	15
	PERCENT	MRC-SW2A-060914	R1404414-002	NM	06/10/2014	06/13/2014	06/13/2014	3	0	3
	PERCENT	MRC-SW1A-060914	R1404414-001	NM	06/10/2014	06/13/2014	06/13/2014	3	0	3
	UG/L	MRC-SW1A-060914	R1404414-001	NM	06/10/2014	06/13/2014	06/13/2014	3	0	3
	UG/L	MRC-SW2A-060914	R1404414-002	NM	06/10/2014	06/13/2014	06/13/2014	3	0	3
OV	PERCENT	MRC-SW2A-060914	R1404414-002	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW8A-060914	R1404414-010	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW1A-060914	R1404414-001	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW9B-060914	R1404414-013	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW8B-060914	R1404414-011	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	TB-060914	R1404414-014	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW7B-060914	R1404414-009	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	PERCENT	MRC-SW7A-060914	R1404414-008	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW6B-060914	R1404414-007	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW6A-060914	R1404414-006	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW5B-060914	R1404414-005	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW5A2-060914	R1404414-004	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW5A1-060914	R1404414-003	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	PERCENT	MRC-SW9A-060914	R1404414-012	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW7A-060914	R1404414-008	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW9B-060914	R1404414-013	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW9A-060914	R1404414-012	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW8B-060914	R1404414-011	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW8A-060914	R1404414-010	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW7B-060914	R1404414-009	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW6B-060914	R1404414-007	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW6A-060914	R1404414-006	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW5B-060914	R1404414-005	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW5A2-060914	R1404414-004	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW5A1-060914	R1404414-003	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MRC-SW1A-060914	R1404414-001	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	TB-060914	R1404414-014	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9
OV	UG/L	MRC-SW2A-060914	R1404414-002	NM	06/10/2014	06/19/2014	06/19/2014	9	0	9

ALS ENVIRONMENTAL

Client:	Tetra Tech	**Service Request No.:**	R1404414
Project:	Middle River	**Date Received:**	6/11/14
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results and Laboratory Control Samples (LCS) recoveries have been reported with each analytical test.

Sample Receipt

Fourteen water samples were received for analysis at ALS-Environmental on 6/11/14. The samples were received in good condition consistent with the accompanying chain of custody form enclosed. The samples were received between 4.1-4.7°C within the 0-6°C temperature guidelines.

Volatile Organics-8260

The Continuing Calibration Verification (CCV) standard exceeded 20% difference for 2-Butanone, tert-Butyl Alcohol and Acetone on 6/19/14. All detected concentrations for these compounds in samples associated with this CCV should be considered as estimated.

The Method Blanks contained low level hits of 1,2,4-Trichlorobenzene, Bromomethane and Naphthalene on 6/19/14. These have been flagged with a "J". All affected data has been "B" flagged appropriately.

2-Chloroethyl Vinyl Ether does not recover in preserved vials.

No other analytical or quality control problems were encountered during analysis.

Extractable Organics -680

All Surrogates for sample MRC-SW8B-060914 (R1404414-011) were outside of the control limits low and have been flagged with a "*". The sample was re-extracted for confirmation of results outside of the seven day holding time and has been flagged with a "*". Both sets of data have been reported.

Surrogate gamma-BHC (Lindane) on Method Blank (RQ1407378-01) was outside of the control limits high and has been flagged with a "*".

No other analytical or quality control problems were encountered during analysis.

Extractable Organics- 522

The low level Laboratory Control Sample was outside of the control limits high and has been flagged with a "*". Both the Laboratory Control Sample and Duplicate Laboratory Control Sample analyzed at the regular level were within limits and no data was affected.

No other analytical or quality control problems were encountered during analysis.

Approved by _____ Date 7/7/14

ALS ASP/CLP Batching Form/Login Sheet

Client Proj #: Surface Water 112ICO6247	Batch Complete: Yes		Date Revised:
Submission: R1404414	Diskette Requested: No		Date Due: 7/2/14
Client: Tetra Tech GEO	Date: 6/13/14		Protocol: SW846
Client Rep: DPATTON	Custody Seal: Present/Absent:		Shipping No.:
Project: Middle River- Lockheed Martin Co	Chain of Custody: Present/Absent:		SDG #:

CAS Job #	Client/EPA ID	Matrix	Requested Parameters	Date Sampled	Date Received	pH (Solids)	% Solids	Remarks Sample Condition
R1404414-001	MRC-SW1A-060914	Water	8260C, 522	6/10/14	6/11/14			
R1404414-002	MRC-SW2A-060914	Water	522, 8260C	6/10/14	6/11/14			
R1404414-003	MRC-SW5A1-060914	Water	8260C, 680	6/10/14	6/11/14			
R1404414-004	MRC-SW5A2-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-005	MRC-SW5B-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-006	MRC-SW6A-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-007	MRC-SW6B-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-008	MRC-SW7A-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-009	MRC-SW7B-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-010	MRC-SW8A-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-011	MRC-SW8B-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-012	MRC-SW9A-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-013	MRC-SW9B-060914	Water	680, 8260C	6/10/14	6/11/14			
R1404414-014	TB-060914	Water	8260C	6/10/14	6/11/14			

Folder Comments: TB& QC-NC; 1 invoice per month; 2CD's; **MDL U**

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Certifications[1]

NELAP Accredited	Maine ID #NY0032	New Hampshire ID # 294100 A/B
Connecticut ID # PH0556	Nebraska Accredited	
Delaware Accredited	Nevada ID # NY-00032	North Carolina #676
DoD ELAP #65817	New Jersey ID # NY004	Pennsylvania ID# 68-786
Florida ID # E87674	New York ID # 10145	Rhode Island ID # 158
Illinois ID #200047		Virginia #460167

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to
http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

ALS Environmental VMS

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

15986

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 2

Project Name: MRC SW 2014	Project Number: 117ECO[illegible]6247
Project Manager: Tony Applevage	Report CC:
Company/Address: 20251 Century Blvd. Ste. 200 Germantown, MD 20874	
Phone #: 301-528-3000	Email: tony.applevage@tetratech.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 1 — 0 — 7

NUMBER OF CONTAINERS; ACAMS VOAs ○ 8260 ○ 624 ○ CLP; ABN/SVOAs ○ 8270 ○ 625; GC/VOAs ○ 8021 ○ 8015; PESTICIDES ○ 8081 ○ 608; PCBs ○ 8082 ○ 608 (608); METALS, TOTAL (List in comments below); METALS, DISSOLVED (List in comments below); 1,4 dioxane (522)

Preservative Key: 0. NONE; 1. HCl; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other ____

REMARKS/ ALTERNATE DESCRIPTION

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	ACAMS VOAs	ABN/SVOAs	METALS, TOTAL	METALS, DISSOLVED	1,4 dioxane
MRC-SW1A-060914		6/9/14	1002	Aq	5	3			2
MRC-SW2A-060914			1013		5	3			2
MRC-SW5A1-060914			1032		5	3		2	
MRC-SW5A2-060914			1041						
MRC-SW5B-060914			1049						
MRC-SW6A-060914			1144						
MRC-SW6B-060914			1149						
MRC-SW7A-060914			1122						
MRC-SW7B-060914			1126						
MRC-SW8A-060914			1157						
MRC-SW8B-060914		↓	1202	↓	↓	↓			

SPECIAL INSTRUCTIONS/COMMENTS
Metals

R1404414 7
Tetra Tech NUS,Inc.
Middle River- Lockheed Martin Corp

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day
21 days
REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Josh Mullis	Printed Name: GEORGE GRABOWSKI	Printed Name: GEORGE GRABOWSKI	Printed Name: Andrew Wisler	Printed Name: Andrew Wisler	Printed Name:
Firm: Tetra Tech	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 6/9/14 1400	Date/Time: 6/9/14 1330	Date/Time: 6/9/14 1850	Date/Time: 6/9/14 1850	Date/Time: 6/9/14 2050	Date/Time: 6/10/14 1010

Distribution: White - Lab Copy; Yellow - Return to Originator

Dan Allen ALS 6/10/14 1820

6-9-14 2050

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 15156

ALS Environmental

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax)

Project Name: MAL SW 2014	Project Number: 112IC06247
Project Manager: Tony Agnavarge	Report CC:
Company/Address: 20251 Century Blvd. Ste. 200, Germantown, MD 20874	
Phone #: 301-528-3000	Email: tony.agnavarge@stantec.com
Sampler's Signature:	Sampler's Printed Name: Josh Mullis

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 1 — — 0 —

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP VOCs	GC/MS SVOAs ○ 8270 ○ 625	GC/LC/FAs ○ 8021 ○ 8015/8021	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS: TOTAL (List in comments below) (6B)	METALS: DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
MAL-SW9A-060914		6/9/14	1132	Aq	5	3	—	—	—	2	—		
MAL-SW9B-060914		1	1137	1	5	3	—	—	—	2	—		
TB-060914		1	—	1	2	2	—	—	—	—	—		

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other ____

SPECIAL INSTRUCTIONS/COMMENTS
Metals

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: MARYLAND

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 1 day ____ 2 day ____ 3 day
____ 4 day ____ 5 day
STANDARD
REQUESTED REPORT DATE

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature:	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name: Josh Mullis	Printed Name: GEORGE GRABOSKI	Printed Name: GEORGE GRABOSKI	Printed Name: Andrea Wisker	Printed Name: Andrea Wisker	Printed Name: Gary Lofe
Firm: Stantec	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 6/9/14 1400	Date/Time: 6/9/14 1330	Date/Time: 6/9/14 1850	Date/Time: 6/9/14 1850	Date/Time: 6/9/14 2050	Date/Time: 6/10/14 1010

Distribution: White - Lab Copy; Yellow - Return to Originator

6/10/14 1120

6-9-14 2050

Cooler Receipt and Preservation Check Form

Project/Client Tetra Tech Folder Number R14-1414

Cooler received on 6/11/14 by: (AD)

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y (N)	5a	Perchlorate samples have required headspace?	(Y) N (NA)
2	Custody papers properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk, or Sulfide have sig* bubbles?	Y (N) NA
3	Did all bottles arrive in good condition (unbroken)?	Y (N)	6	Where did the bottles originate?	(ALS/ROC) (CLIENT)
4	Circle: (Wet Ice) Dry Ice Gel packs present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 6/11/14 Time: 1018 ID: IR#3 - (IR#4) From: Temp Blank (Sample Bottle)

Observed Temp (°C)	6.3°	4.1	4.7°				
Correction Factor (°C)	-1.7	0.0	0.0				
Corrected Temp (°C)	4.6°	4.1	4.7°				
Within 0-6°C?	(Y) N	(Y) N	(Y) N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by (AD) on 6/11/14 at 1028
5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: (JH)

Cooler Breakdown: Date: 6/11/14 Time: 1520 by: (AD)

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

pH	Reagent	Yes	No	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
<4	$NaHSO_4$	✓		BD826123H	5/15				
Residual Chlorine (-)	For CN Phenol and 522	✓		If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol).					
	$Na_2S_2O_3$	-	-						
	ZnAcetate	-	-						
	HCl	**	**	Client covered					

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: Client, Client covered

Other Comments:

Acid vial w/ cracked caps (disposed of by SMO) (SW9A)

PC Secondary Review: (JH)

*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/13/14 13:13

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\msvoa12\Data\061314\M6497.D\
Instrument ID: R-MS-12

Analytical Method: 8260C
Analysis Lot: 215801

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.96	88496	Pass
75	95	30	60	46.42	228800	Pass
95	95	100	100	100.00	492843	Pass
96	95	5	9	6.24	30756	Pass
173	174	0	2	0.83	3219	Pass
174	95	50	120	78.43	386539	Pass
175	174	5	9	7.37	28496	Pass
176	174	95	101	96.13	371584	Pass
177	176	5	9	6.54	24288	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Initial CalibrationICAL	0.5 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6499.D\	6/13/14 14:37	
Initial CalibrationICAL	1.0 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6500.D\	6/13/14 15:09	
Initial CalibrationICAL	2.0 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6501.D\	6/13/14 15:42	
Initial CalibrationICAL	5.0 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6502.D\	6/13/14 16:14	
Initial CalibrationICAL	20 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6503.D\	6/13/14 16:46	
Initial CalibrationICAL	50 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6504.D\	6/13/14 17:19	
Initial CalibrationICAL	100 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6505.D\	6/13/14 17:51	
Initial CalibrationICAL	200 ppb	I:\ACQUDATA\msvoa12\Data\061314\M6506.D\	6/13/14 18:23	

KRC 6/14/14

Initial Calibration - Summary Report

Calibration ID: RC1400048 **Instrument ID:** R-MS-12
8260 Waters - MS#2 - WC013114 **Column Name:** 1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
1,1,1,2-Tetrachloroethane	T	Average RF			0.3312	<=20	4.7
1,1,1-Trichloroethane (TCA)	T	Average RF		0.100	0.7425	<=20	6.2
1,1,2,2-Tetrachloroethane	T	Average RF		0.300	0.5662	<=20	5.4
1,1,2-Trichloroethane	T	Average RF		0.100	0.2285	<=20	4.4
1,1,2-Trichlorotrifluoroethane	T	Average RF		0.100	0.4199	<=20	1.7
1,1-Dichloroethane (1,1-DCA)	T	Average RF		0.200	0.8965	<=20	3.6
1,1-Dichloroethene (1,1-DCE)	T	Average RF		0.100	0.3927	<=20	11.3
1,1-Dichloropropene	T	Average RF			0.3962	<=20	1.6
1,2,3-Trichlorobenzene	T	Average RF			0.6167	<=20	10.9
1,2,3-Trichloropropane	T	Average RF			0.1619	<=20	8.3
1,2,4-Trichlorobenzene	T	Average RF		0.200	0.7261	<=20	4.9
1,2,4-Trimethylbenzene	T	Average RF			2.431	<=20	5.3
1,2-Dibromo-3-chloropropane (DBCP)	T	Average RF		0.050	0.1025	<=20	3.4
1,2-Dibromoethane	T	Average RF		0.100	0.2437	<=20	7.0
1,2-Dichloro-1,1,2-trifluoroethane (CFC 123	T	Average RF			0.5809	<=20	1.5
1,2-Dichlorobenzene	T	Average RF		0.400	1.278	<=20	2.1
1,2-Dichloroethane	T	Average RF		0.100	0.3640	<=20	3.1
1,2-Dichloropropane	T	Average RF		0.100	0.3329	<=20	3.7
1,3,5-Trichlorobenzene	T	Average RF			0.8305	<=20	6.6
1,3,5-Trimethylbenzene	T	Average RF			2.418	<=20	5.0
1,3-Dichlorobenzene	T	Average RF		0.600	1.364	<=20	3.1
1,3-Dichloropropane	T	Average RF			0.4524	<=20	1.6
1,4-Dichlorobenzene	T	Average RF		0.500	1.393	<=20	5.6
1,4-Dioxane	T	Average RF			0.002072	<=20	6.4
1-Butanol	T	Average RF			0.004952	<=20	9.4
1-Chloro-4-(trifluoromethyl)benzene	T	Average RF			0.4185	<=20	3.7
2,2-Dichloro-1,1,1-trifluoroethane (CFC 123	T	Average RF			0.6622	<=20	4.7
2,2-Dichloropropane	T	Average RF			0.7868	<=20	9.0
2,3,6-Trichlorotoluene	T	Average RF			0.3666	<=20	4.9
2,4,5-Trichlorotoluene	T	Average RF			0.3902	<=20	3.7
2,4-, 2,5-, and 2,6-Dichlorotoluene Coelution	T	Average RF			1.031	<=20	5.0
2,4-Dichlorobenzotrifluoride	T	Average RF			0.5290	<=20	4.6
2,5-Dichlorobenzotrifluoride	T	Average RF			0.5736	<=20	3.0
2-Bromo-2-chloro-1,1,1-trifluoroethane	T	Average RF				<=20	
2-Butanone (MEK)	T	Average RF		0.05	0.1412	<=20	9.2
2-Chloro-1,3-butadiene	T	Average RF			0.8140	<=20	4.2
2-Chlorobenzotrifluoride	T	Average RF			0.8449	<=20	2.9
2-Chloroethyl Vinyl Ether	T	Average RF			0.1598	<=20	3.4
2-Chlorotoluene	T	Average RF			2.021	<=20	3.9
2-Hexanone	T	Average RF		0.05	0.1585	<=20	4.9
2-Methyl-1-propanol	T	Average RF			0.008422	<=20	9.8
2-Methyl-2-propanol	T	Average RF			0.03095	<=20	4.8
2-Nitropropane	T	Average RF			0.05251	<=20	7.5
2-Propanol	T	Average RF			0.01880	<=20	5.4
3,4- and 2,3-Dichlorotoluene Coelution	T	Average RF			1.106	<=20	8.8
3,4-Dichlorobenzotrifluoride	T	Average RF			0.5797	<=20	4.2
3-Chloro-1-propene	T	Average RF			0.2910	<=20	6.7
3-Chlorobenzotrifluoride	T	Average RF			0.4621	<=20	3.3
3-Chlorotoluene	T	Average RF			2.109	<=20	5.1
4-Chlorotoluene	T	Average RF			2.390	<=20	3.8
4-Isopropyltoluene	T	Average RF			2.384	<=20	5.6
4-Methyl-2-pentanone	T	Average RF		0.05	0.2123	<=20	5.0

00128

Initial Calibration - Summary Report

Calibration ID:	RC1400048	**Instrument ID:**	R-MS-12
		Column Name:	1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
Acetone	T	Average RF		0.05	0.09881	<=20	1.1
Acetonitrile	T	Average RF			0.01689	<=20	4.1
Acrolein	T	Average RF			0.03774	<=20	12.9
Acrylonitrile	T	Average RF			0.1206	<=20	3.5
Benzene	T	Average RF		0.500	1.285	<=20	3.8
Bromobenzene	T	Average RF			0.7321	<=20	2.1
Bromochloromethane	T	Average RF			0.2794	<=20	3.9
Bromodichloromethane	T	Average RF		0.200	0.3973	<=20	3.1
Bromoform	T	Average RF		0.100	0.3115	<=20	4.3
Bromomethane	T	Average RF		0.100	0.2636	<=20	16.0
Carbon Disulfide	T	Average RF		0.100	1.516	<=20	9.7
Carbon Tetrachloride	T	Average RF		0.05	0.1243	<=20	11.9
Chlorobenzene	T	Average RF		0.500	0.9545	<=20	3.1
Chloroethane	T	Average RF		0.100	0.3700	<=20	7.9
Chloroform	T	Average RF		0.200	0.8431	<=20	6.5
Chloromethane	T	Average RF		0.100	0.5810	<=20	4.1
Cyclohexane	T	Average RF		0.100	0.3451	<=20	14.2
Cyclohexanone	T	Average RF			0.02767	<=20	9.4
Dibromochloromethane	T	Average RF		0.100	0.2867	<=20	5.7
Dibromomethane	T	Average RF			0.1473	<=20	3.3
Dichlorodifluoromethane (CFC 12)	T	Average RF		0.100	0.5045	<=20	8.3
Dichlorofluoromethane (CFC 21)	T	Average RF			0.8818	<=20	7.1
Dichloromethane	T	Average RF		0.100	0.5147	<=20	15.5
Diethyl Ether	T	Average RF			0.3887	<=20	6.0
Diisopropyl Ether	T	Average RF			1.752	<=20	5.1
Ethyl Methacrylate	T	Average RF			0.3281	<=20	5.1
Ethyl tert-Butyl Ether	T	Average RF			1.490	<=20	3.9
Ethylbenzene	T	Average RF		0.100	0.5238	<=20	2.7
Hexachlorobutadiene	T	Average RF			0.3114	<=20	18.0
Iodomethane	T	Linear	1/X		0.4370	>=0.99	0.9981
Isopropylbenzene (Cumene)	T	Average RF		0.100	2.886	<=20	6.2
Methacrylonitrile	T	Linear	1/X		0.1489	>=0.99	0.9994
Methyl Acetate	T	Average RF		0.100	0.2364	<=20	4.9
Methyl Methacrylate	T	Average RF			0.1654	<=20	6.8
Methyl tert-Butyl Ether	T	Average RF		0.100	1.152	<=20	3.7
Methylcyclohexane	T	Average RF		0.100	0.3992	<=20	9.7
Naphthalene	T	Average RF			1.392	<=20	7.3
Propionitrile	T	Average RF			0.04557	<=20	17.0
Styrene	T	Average RF		0.300	1.047	<=20	3.3
Tetrachloroethene (PCE)	T	Average RF		0.200	0.2709	<=20	3.8
Tetrahydrofuran (THF)	T	Average RF			0.09777	<=20	8.2
Toluene	T	Average RF		0.400	1.361	<=20	3.9
Trichloroethene (TCE)	T	Average RF		0.200	0.3273	<=20	4.0
Trichlorofluoromethane (CFC 11)	T	Average RF		0.100	0.7177	<=20	2.5
Vinyl Acetate	T	Average RF			0.07886	<=20	8.7
Vinyl Chloride	T	Average RF		0.100	0.6376	<=20	3.5
cis-1,2-Dichloroethene	T	Average RF		0.100	0.5403	<=20	3.9
cis-1,3-Dichloropropene	T	Average RF		0.200	0.5023	<=20	3.7
m,p-Xylenes	T	Average RF		0.100	0.6427	<=20	3.6
n-Butyl Acetate	T	Average RF			0.4040	<=20	7.4
n-Butylbenzene	T	Average RF			2.114	<=20	4.3
n-Heptane	T	Average RF			0.3698	<=20	13.7

Initial Calibration - Summary Report

Calibration ID:	RC1400048	**Instrument ID:**	R-MS-12
		Column Name:	1

Analyte	Type	Curve Fit	Weighting	Min RF	Mean RF	Criteria	Result
n-Propylbenzene	T	Average RF			3.379	<=20	8.8
o-Xylene	T	Average RF		0.300	0.6461	<=20	2.0
sec-Butylbenzene	T	Average RF			2.797	<=20	6.6
tert-Amyl Methyl Ether	T	Average RF			1.288	<=20	4.6
tert-Butylbenzene	T	Average RF			1.995	<=20	4.1
trans-1,2-Dichloroethene	T	Average RF		0.100	0.4855	<=20	6.7
trans-1,3-Dichloropropene	T	Average RF		0.100	0.4146	<=20	3.4
trans-1,4-Dichloro-2-butene	T	Average RF			0.1778	<=20	17.1
1,2-Dichloroethane-d4	S	Average RF			0.3043	<=20	1.5
4-Bromofluorobenzene	S	Average RF			0.4652	<=20	1.4
Dibromofluoromethane	S	Average RF			0.2865	<=20	0.6
Toluene-d8	S	Average RF			1.241	<=20	0.6

Initial Calibration Verification Summary Report

KRC 6/14/14

Calibration ID:	RC1400048	**Instrument ID:**	R-MS-12
	WQ613/14	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
1,1,1,2-Tetrachloroethane	RC1400048-09	T	Average RF	50	46.96	ppm	-6.1	<=30
1,1,1-Trichloroethane (TCA)	RC1400048-09	T	Average RF	50	46.80	ppm	-6.4	<=30
1,1,2,2-Tetrachloroethane	RC1400048-09	T	Average RF	50	46.02	ppm	-8.0	<=30
1,1,2-Trichloroethane	RC1400048-09	T	Average RF	50	46.74	ppm	-6.5	<=30
1,1,2-Trichlorotrifluoroethane	RC1400048-09	T	Average RF	50	47.71	ppm	-4.6	<=30
1,1-Dichloroethane (1,1-DCA)	RC1400048-09	T	Average RF	50	46.32	ppm	-7.4	<=30
1,1-Dichloroethene (1,1-DCE)	RC1400048-09	T	Average RF	50	51.17	ppm	2.3	<=30
1,1-Dichloropropene	RC1400048-09	T	Average RF	50	47.79	ppm	-4.4	<=30
1,2,3-Trichlorobenzene	RC1400048-09	T	Average RF	50	47.12	ppm	-5.8	<=30
1,2,3-Trichloropropane	RC1400048-09	T	Average RF	50	45.24	ppm	-9.5	<=30
1,2,4-Trichlorobenzene	RC1400048-09	T	Average RF	50	48.82	ppm	-2.4	<=30
1,2,4-Trimethylbenzene	RC1400048-09	T	Average RF	50	45.86	ppm	-8.3	<=30
1,2-Dibromo-3-chloropropane (DBCP)	RC1400048-09	T	Average RF	50	46.52	ppm	-7.0	<=30
1,2-Dibromoethane	RC1400048-09	T	Average RF	50	46.28	ppm	-7.4	<=30
1,2-Dichloro-1,1,2-trifluoroethane (CFC 123	RC1400048-09	T	Average RF	50	59.45	ppm	18.9	<=30
1,2-Dichlorobenzene	RC1400048-09	T	Average RF	50	46.06	ppm	-7.9	<=30
1,2-Dichloroethane	RC1400048-09	T	Average RF	50	46.14	ppm	-7.7	<=30
1,2-Dichloropropane	RC1400048-09	T	Average RF	50	47.12	ppm	-5.8	<=30
1,3,5-Trichlorobenzene	RC1400048-09	T	Average RF	50	48.51	ppm	-3.0	<=30
1,3,5-Trimethylbenzene	RC1400048-09	T	Average RF	50	45.88	ppm	-8.2	<=30
1,3-Dichlorobenzene	RC1400048-09	T	Average RF	50	46.41	ppm	-7.2	<=30
1,3-Dichloropropane	RC1400048-09	T	Average RF	50	46.74	ppm	-6.5	<=30
1,4-Dichlorobenzene	RC1400048-09	T	Average RF	50	46.11	ppm	-7.8	<=30
1,4-Dioxane	RC1400048-09	T	Average RF	1000	1044	ppm	4.4	<=30
1-Butanol	RC1400048-09	T	Average RF	2500	2907	ppm	16.3	<=30
1-Chloro-4-(trifluoromethyl)benzene	RC1400048-09	T	Average RF	50	49.39	ppm	-1.2	<=30
2,2-Dichloro-1,1,1-trifluoroethane (CFC 123	RC1400048-09	T	Average RF	50	50.02	ppm	0.0	<=30
2,2-Dichloropropane	RC1400048-09	T	Average RF	50	46.46	ppm	-7.1	<=30
2,3,6-Trichlorotoluene	RC1400048-09	T	Average RF	50	52.44	ppm	4.9	<=30
2,4,5-Trichlorotoluene	RC1400048-09	T	Average RF	50	55.49	ppm	11.0	<=30
2,4-, 2,5-, and 2,6-Dichlorotoluene Coelution	RC1400048-09	T	Average RF	150	151.7	ppm	1.1	<=30
2,4-Dichlorobenzotrifluoride	RC1400048-09	T	Average RF	50	47.30	ppm	-5.4	<=30
2,5-Dichlorobenzotrifluoride	RC1400048-09	T	Average RF	50	50.74	ppm	1.5	<=30
2-Butanone (MEK)	RC1400048-09	T	Average RF	50	51.00	ppm	2.0	<=30
2-Chloro-1,3-butadiene	RC1400048-09	T	Average RF	50	47.81	ppm	-4.4	<=30
2-Chlorobenzotrifluoride	RC1400048-09	T	Average RF	50	48.54	ppm	-2.9	<=30
2-Chloroethyl Vinyl Ether	RC1400048-09	T	Average RF	50	45.92	ppm	-8.2	<=30
2-Chlorotoluene	RC1400048-09	T	Average RF	50	46.13	ppm	-7.7	<=30
2-Hexanone	RC1400048-09	T	Average RF	50	51.83	ppm	3.7	<=30
2-Methyl-1-propanol	RC1400048-09	T	Average RF	1000	1047	ppm	4.7	<=30
2-Methyl-2-propanol	RC1400048-09	T	Average RF	1000	1040	ppm	4.0	<=30
2-Nitropropane	RC1400048-09	T	Average RF	100	95.92	ppm	-4.1	<=30
2-Propanol	RC1400048-09	T	Average RF	1000	1102	ppm	10.2	<=30
3,4- and 2,3-Dichlorotoluene Coelution	RC1400048-09	T	Average RF	100	99.71	ppm	-0.3	<=30
3,4-Dichlorobenzotrifluoride	RC1400048-09	T	Average RF	50	48.55	ppm	-2.9	<=30
3-Chloro-1-propene	RC1400048-09	T	Average RF	50	44.97	ppm	-10.1	<=30
3-Chlorobenzotrifluoride	RC1400048-09	T	Average RF	50	48.83	ppm	-2.3	<=30
3-Chlorotoluene	RC1400048-09	T	Average RF	50	48.54	ppm	-2.9	<=30
4-Chlorotoluene	RC1400048-09	T	Average RF	50	46.27	ppm	-7.5	<=30
4-Isopropyltoluene	RC1400048-09	T	Average RF	50	47.03	ppm	-5.9	<=30
4-Methyl-2-pentanone	RC1400048-09	T	Average RF	50	50.47	ppm	0.9	<=30

00251

Initial Calibration Verification Summary Report

Calibration ID:	RC1400048	**Instrument ID:**	R-MS-12
		Column Name:	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Acetone	RC1400048-09	T	Average RF	50	47.89	ppm	-4.2	<=30
Acetonitrile	RC1400048-09	T	Average RF	250	245.8	ppm	-1.7	<=30
Acrolein	RC1400048-09	T	Average RF	100	90.76	ppm	-9.2	<=30
Acrylonitrile	RC1400048-09	T	Average RF	250	237.4	ppm	-5.0	<=30
Benzene	RC1400048-09	T	Average RF	50	46.20	ppm	-7.6	<=30
Bromobenzene	RC1400048-09	T	Average RF	50	45.18	ppm	-9.6	<=30
Bromochloromethane	RC1400048-09	T	Average RF	50	47.15	ppm	-5.7	<=30
Bromodichloromethane	RC1400048-09	T	Average RF	50	46.61	ppm	-6.8	<=30
Bromoform	RC1400048-09	T	Average RF	50	45.47	ppm	-9.1	<=30
Bromomethane	RC1400048-09	T	Average RF	50	50.54	ppm	1.1	<=30
Carbon Disulfide	RC1400048-09	T	Average RF	50	44.92	ppm	-10.2	<=30
Carbon Tetrachloride	RC1400048-09	T	Average RF	50	46.54	ppm	-6.9	<=30
Chlorobenzene	RC1400048-09	T	Average RF	50	46.78	ppm	-6.4	<=30
Chloroethane	RC1400048-09	T	Average RF	50	45.07	ppm	-9.9	<=30
Chloroform	RC1400048-09	T	Average RF	50	46.68	ppm	-6.6	<=30
Chloromethane	RC1400048-09	T	Average RF	50	47.96	ppm	-4.1	<=30
Cyclohexane	RC1400048-09	T	Average RF	50	44.02	ppm	-12.0	<=30
Cyclohexanone	RC1400048-09	T	Average RF	1000	813.6	ppm	-18.6	<=30
Dibromochloromethane	RC1400048-09	T	Average RF	50	47.68	ppm	-4.6	<=30
Dibromomethane	RC1400048-09	T	Average RF	50	47.52	ppm	-5.0	<=30
Dichlorodifluoromethane (CFC 12)	RC1400048-09	T	Average RF	50	52.43	ppm	4.9	<=30
Dichlorofluoromethane (CFC 21)	RC1400048-09	T	Average RF	50	42.30	ppm	-15.4	<=30
Dichloromethane	RC1400048-09	T	Average RF	50	44.83	ppm	-10.3	<=30
Diethyl Ether	RC1400048-09	T	Average RF	50	46.97	ppm	-6.1	<=30
Diisopropyl Ether	RC1400048-09	T	Average RF	50	45.93	ppm	-8.1	<=30
Ethyl Methacrylate	RC1400048-09	T	Average RF	50	48.94	ppm	-2.1	<=30
Ethyl tert-Butyl Ether	RC1400048-09	T	Average RF	50	46.56	ppm	-6.9	<=30
Ethylbenzene	RC1400048-09	T	Average RF	50	43.45	ppm	-13.1	<=30
Hexachlorobutadiene	RC1400048-09	T	Average RF	50	45.76	ppm	-8.5	<=30
Iodomethane	RC1400048-09	T	Linear	50	45.49	ppm	-9.0	<=30
Isopropylbenzene (Cumene)	RC1400048-09	T	Average RF	50	45.93	ppm	-8.1	<=30
Methacrylonitrile	RC1400048-09	T	Linear	50	47.30	ppm	-5.4	<=30
Methyl Acetate	RC1400048-09	T	Average RF	50	53.03	ppm	6.1	<=30
Methyl Methacrylate	RC1400048-09	T	Average RF	50	46.16	ppm	-7.7	<=30
Methyl tert-Butyl Ether	RC1400048-09	T	Average RF	50	50.64	ppm	1.3	<=30
Methylcyclohexane	RC1400048-09	T	Average RF	50	46.48	ppm	-7.0	<=30
Naphthalene	RC1400048-09	T	Average RF	50	51.73	ppm	3.5	<=30
Propionitrile	RC1400048-09	T	Average RF	250	232.8	ppm	-6.9	<=30
Styrene	RC1400048-09	T	Average RF	50	47.64	ppm	-4.7	<=30
Tetrachloroethene (PCE)	RC1400048-09	T	Average RF	50	45.79	ppm	-8.4	<=30
Tetrahydrofuran (THF)	RC1400048-09	T	Average RF	50	49.35	ppm	-1.3	<=30
Toluene	RC1400048-09	T	Average RF	50	46.59	ppm	-6.8	<=30
Trichloroethene (TCE)	RC1400048-09	T	Average RF	50	46.08	ppm	-7.8	<=30
Trichlorofluoromethane (CFC 11)	RC1400048-09	T	Average RF	50	46.64	ppm	-6.7	<=30
Vinyl Acetate	RC1400048-09	T	Average RF	50	50.98	ppm	2.0	<=30
Vinyl Chloride	RC1400048-09	T	Average RF	50	46.85	ppm	-6.3	<=30
cis-1,2-Dichloroethene	RC1400048-09	T	Average RF	50	45.97	ppm	-8.1	<=30
cis-1,3-Dichloropropene	RC1400048-09	T	Average RF	50	47.96	ppm	-4.1	<=30
m,p-Xylenes	RC1400048-09	T	Average RF	100	93.70	ppm	-6.3	<=30
n-Butyl Acetate	RC1400048-09	T	Average RF	50	50.41	ppm	0.8	<=30
n-Butylbenzene	RC1400048-09	T	Average RF	50	48.26	ppm	-3.5	<=30

Initial Calibration Verification Summary Report

Calibration ID:	RC1400048	**Instrument ID:**	R-MS-12
		Column Name:	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
n-Heptane	RC1400048-09	T	Average RF	50	47.29	ppm	-5.4	<=30
n-Propylbenzene	RC1400048-09	T	Average RF	50	46.01	ppm	-8.0	<=30
o-Xylene	RC1400048-09	T	Average RF	50	45.36	ppm	-9.3	<=30
sec-Butylbenzene	RC1400048-09	T	Average RF	50	46.12	ppm	-7.8	<=30
tert-Amyl Methyl Ether	RC1400048-09	T	Average RF	50	47.61	ppm	-4.8	<=30
tert-Butylbenzene	RC1400048-09	T	Average RF	50	45.78	ppm	-8.4	<=30
trans-1,2-Dichloroethene	RC1400048-09	T	Average RF	50	46.99	ppm	-6.0	<=30
trans-1,3-Dichloropropene	RC1400048-09	T	Average RF	50	49.07	ppm	-1.9	<=30
trans-1,4-Dichloro-2-butene	RC1400048-09	T	Average RF	50	38.08	ppm	-23.8	<=30
1,2-Dichloroethane-d4	RC1400048-09	S	Average RF	50	51.29	ppm	2.6	<=30
4-Bromofluorobenzene	RC1400048-09	S	Average RF	50	50.65	ppm	1.3	<=30
Dibromofluoromethane	RC1400048-09	S	Average RF	50	50.79	ppm	1.6	<=30
Toluene-d8	RC1400048-09	S	Average RF	50	50.02	ppm	0.0	<=30

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/19/14 09:40

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\msvoa12\Data\061914\M6682.D\
Instrument ID: R-MS-12

Analytical Method: 8260C
Analysis Lot: 397695

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.02	92680	Pass
75	95	30	60	50.31	245205	Pass
95	95	100	100	100.00	487402	Pass
96	95	5	9	6.62	32288	Pass
173	174	0	2	1.02	3728	Pass
174	95	50	120	75.07	365909	Pass
175	174	5	9	7.83	28640	Pass
176	174	95	101	98.29	359659	Pass
177	176	5	9	6.22	22379	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1406793-02	I:\ACQUDATA\msvoa12\Data\061914\M6683.D\	6/19/14 10:13	
Lab Control Sample	RQ1406793-03	I:\ACQUDATA\msvoa12\Data\061914\M6684.D\	6/19/14 10:46	
Duplicate Lab Control Sample	RQ1406793-04	I:\ACQUDATA\msvoa12\Data\061914\M6685.D\	6/19/14 11:18	
Method Blank	RQ1406793-05	I:\ACQUDATA\msvoa12\Data\061914\M6687.D\	6/19/14 12:23	
TB-060914	R1404414-014	I:\ACQUDATA\msvoa12\Data\061914\M6690.D\	6/19/14 13:58	
MRC-SW9A-060914	R1404414-012	I:\ACQUDATA\msvoa12\Data\061914\M6691.D\	6/19/14 14:29	
MRC-SW1A-060914	R1404414-001	I:\ACQUDATA\msvoa12\Data\061914\M6692.D\	6/19/14 15:02	
MRC-SW2A-060914	R1404414-002	I:\ACQUDATA\msvoa12\Data\061914\M6693.D\	6/19/14 15:34	
MRC-SW5A1-060914	R1404414-003	I:\ACQUDATA\msvoa12\Data\061914\M6694.D\	6/19/14 16:06	
MRC-SW5A2-060914	R1404414-004	I:\ACQUDATA\msvoa12\Data\061914\M6695.D\	6/19/14 16:39	
MRC-SW5B-060914	R1404414-005	I:\ACQUDATA\msvoa12\Data\061914\M6696.D\	6/19/14 17:11	
MRC-SW6A-060914	R1404414-006	I:\ACQUDATA\msvoa12\Data\061914\M6697.D\	6/19/14 17:44	
MRC-SW6B-060914	R1404414-007	I:\ACQUDATA\msvoa12\Data\061914\M6698.D\	6/19/14 18:16	
MRC-SW7A-060914	R1404414-008	I:\ACQUDATA\msvoa12\Data\061914\M6699.D\	6/19/14 18:48	
MRC-SW7B-060914	R1404414-009	I:\ACQUDATA\msvoa12\Data\061914\M6700.D\	6/19/14 19:20	
MRC-SW8A-060914	R1404414-010	I:\ACQUDATA\msvoa12\Data\061914\M6701.D\	6/19/14 19:53	
MRC-SW8B-060914	R1404414-011	I:\ACQUDATA\msvoa12\Data\061914\M6702.D\	6/19/14 20:25	
MRC-SW9B-060914	R1404414-013	I:\ACQUDATA\msvoa12\Data\061914\M6703.D\	6/19/14 20:57	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/19/14

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\msvoa12\Data\061914\M6683.D\

Calibration Date: 6/13/14
Calibration ID: RC1400048
Analysis Lot: 397695
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1,1,2-Tetrachloroethane	50.0	50.8	0.3312	0.3363	1.5	NA	± 20 %	Average RF
1,1,1-Trichloroethane (TCA)	50.0	53.5	0.7425	0.7945	7.0	NA	± 20 %	Average RF
1,1,2,2-Tetrachloroethane	50.0	52.7	0.5662	0.5968	5.4	NA	± 20 %	Average RF
1,1,2-Trichlorotrifluoroethane	50.0	51.4	0.4199	0.4314	2.7	NA	± 20 %	Average RF
1,1-Dichloroethane (1,1-DCA)	50.0	53.6	0.8965	0.9610	7.2	NA	± 20 %	Average RF
1,1-Dichloroethene (1,1-DCE)	50.0	48.2	0.3927	0.3788	-3.6	NA	± 20 %	Average RF
1,1-Dichloropropene	50.0	51.3	0.3962	0.4067	2.6	NA	± 20 %	Average RF
1,2,3-Trichlorobenzene	50.0	51.6	0.6167	0.6358	3.1	NA	± 20 %	Average RF
1,2,3-Trichloropropane	50.0	53.4	0.1619	0.1728	6.7	NA	± 20 %	Average RF
1,2,4-Trichlorobenzene	50.0	51.5	0.7261	0.7475	2.9	NA	± 20 %	Average RF
1,2,4-Trimethylbenzene	50.0	51.5	2.431	2.505	3.1	NA	± 20 %	Average RF
1,2-Dibromo-3-chloropropane (DBCP)	50.0	49.9	0.1025	0.1023	-0.2	NA	± 20 %	Average RF
1,2-Dibromoethane	50.0	50.9	0.2437	0.2479	1.7	NA	± 20 %	Average RF
1,2-Dichlorobenzene	50.0	49.5	1.278	1.265	-1.0	NA	± 20 %	Average RF
1,2-Dichloroethane	50.0	55.5	0.3640	0.4042	11.1	NA	± 20 %	Average RF
1,2-Dichloropropane	50.0	50.8	0.3329	0.3379	1.5	NA	± 20 %	Average RF
1,3-Dichlorobenzene	50.0	48.8	1.364	1.330	-2.5	NA	± 20 %	Average RF
1,3-Dichloropropane	50.0	54.4	0.4524	0.4925	8.9	NA	± 20 %	Average RF
1,4-Dichlorobenzene	50.0	49.1	1.393	1.368	-1.8	NA	± 20 %	Average RF
2,2-Dichloropropane	50.0	52.6	0.7868	0.8280	5.2	NA	± 20 %	Average RF
2-Butanone (MEK)	50.0	64.1	0.1412	0.1812	28.3 *	NA	± 20 %	Average RF
2-Chloroethyl Vinyl Ether	50.0	53.6	0.1598	0.1711	7.1	NA	± 20 %	Average RF
2-Chlorotoluene	50.0	52.4	2.021	2.119	4.8	NA	± 20 %	Average RF
2-Hexanone	50.0	59.6	0.1585	0.1889	19.2	NA	± 20 %	Average RF
tert-Butyl Alcohol	1000	1210	0.03095	0.03734	20.6 *	NA	± 20 %	Average RF
4-Chlorotoluene	50.0	52.4	2.390	2.503	4.7	NA	± 20 %	Average RF
4-Isopropyltoluene	50.0	50.6	2.384	2.413	1.2	NA	± 20 %	Average RF
4-Methyl-2-pentanone	50.0	55.8	0.2123	0.2369	11.6	NA	± 20 %	Average RF
Acetone	50.0	68.1	0.09881	0.1346	36.2 *	NA	± 20 %	Average RF
Benzene	50.0	50.8	1.285	1.306	1.6	NA	± 20 %	Average RF
Bromobenzene	50.0	48.4	0.7321	0.7086	-3.2	NA	± 20 %	Average RF
Bromochloromethane	50.0	51.3	0.2794	0.2869	2.7	NA	± 20 %	Average RF
Bromodichloromethane	50.0	50.8	0.3973	0.4033	1.5	NA	± 20 %	Average RF
Bromoform	50.0	47.8	0.3115	0.2977	-4.5	NA	± 20 %	Average RF
Bromomethane	50.0	45.8	0.2636	0.2417	-8.3	NA	± 20 %	Average RF
Carbon Disulfide	50.0	48.8	1.516	1.481	-2.3	NA	± 20 %	Average RF
Carbon Tetrachloride	50.0	51.2	0.1243	0.1272	2.3	NA	± 20 %	Average RF
Chlorobenzene	50.0	49.3	0.9545	0.9417	-1.3	NA	± 20 %	Average RF
Chloroethane	50.0	42.8	0.3700	0.3165	-14.5	NA	± 20 %	Average RF
Chloroform	50.0	54.2	0.8431	0.9131	8.3	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/19/14

Continuing Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

File ID: I:\ACQUDATA\msvoa12\Data\061914\M6683.D\

Calibration Date: 6/13/14
Calibration ID: RC1400048
Analysis Lot: 397695
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Chloromethane	50.0	47.2	0.5810	0.5479	-5.7	NA	± 20 %	Average RF
Dibromochloromethane	50.0	51.3	0.2867	0.2940	2.5	NA	± 20 %	Average RF
Dibromomethane	50.0	53.5	0.1473	0.1578	7.1	NA	± 20 %	Average RF
Dichlorodifluoromethane (CFC 12)	50.0	52.1	0.5045	0.5256	4.2	NA	± 20 %	Average RF
Methylene Chloride	50.0	48.4	0.5147	0.4977	-3.3	NA	± 20 %	Average RF
Diisopropyl Ether	50.0	50.6	1.752	1.772	1.1	NA	± 20 %	Average RF
Ethyl tert-Butyl Ether	50.0	52.2	1.490	1.555	4.3	NA	± 20 %	Average RF
Ethylbenzene	50.0	49.6	0.5238	0.5198	-0.8	NA	± 20 %	Average RF
Hexachlorobutadiene	50.0	54.7	0.3114	0.3409	9.5	NA	± 20 %	Average RF
Isopropylbenzene (Cumene)	50.0	50.1	2.886	2.890	0.1	NA	± 20 %	Average RF
Methyl tert-Butyl Ether	50.0	57.0	1.152	1.313	14.0	NA	± 20 %	Average RF
Naphthalene	50.0	55.3	1.392	1.540	10.6	NA	± 20 %	Average RF
Styrene	50.0	50.0	1.047	1.048	0.1	NA	± 20 %	Average RF
Tetrachloroethene (PCE)	50.0	47.2	0.2709	0.2555	-5.7	NA	± 20 %	Average RF
Toluene	50.0	49.6	1.361	1.350	-0.8	NA	± 20 %	Average RF
Trichloroethene (TCE)	50.0	46.7	0.3273	0.3055	-6.6	NA	± 20 %	Average RF
Trichlorofluoromethane (CFC 11)	50.0	54.3	0.7177	0.7792	8.6	NA	± 20 %	Average RF
Vinyl Acetate	50.0	58.6	0.07886	0.09248	17.3	NA	± 20 %	Average RF
Vinyl Chloride	50.0	46.1	0.6376	0.5874	-7.9	NA	± 20 %	Average RF
Xylenes, Total	150	147	NA	NA	NA	NA	± 20 %	
cis-1,2-Dichloroethene	50.0	50.6	0.5403	0.5462	1.1	NA	± 20 %	Average RF
cis-1,3-Dichloropropene	50.0	50.9	0.5023	0.5109	1.7	NA	± 20 %	Average RF
m,p-Xylenes	100	98.7	0.6427	0.6342	-1.3	NA	± 20 %	Average RF
n-Butylbenzene	50.0	54.0	2.114	2.283	8.0	NA	± 20 %	Average RF
n-Propylbenzene	50.0	51.2	3.379	3.461	2.4	NA	± 20 %	Average RF
o-Xylene	50.0	48.2	0.6461	0.6222	-3.7	NA	± 20 %	Average RF
sec-Butylbenzene	50.0	50.6	2.797	2.828	1.1	NA	± 20 %	Average RF
tert-Amyl Methyl Ether	50.0	52.7	1.288	1.358	5.4	NA	± 20 %	Average RF
tert-Butylbenzene	50.0	49.2	1.995	1.964	-1.5	NA	± 20 %	Average RF
trans-1,2-Dichloroethene	50.0	49.9	0.4855	0.4847	-0.2	NA	± 20 %	Average RF
trans-1,3-Dichloropropene	50.0	52.5	0.4146	0.4349	4.9	NA	± 20 %	Average RF
4-Bromofluorobenzene	50.0	51.2	0.4652	0.4765	2.4	NA	± 20 %	Average RF
Dibromofluoromethane	50.0	52.9	0.2865	0.3030	5.8	NA	± 20 %	Average RF
Toluene-d8	50.0	50.7	1.241	1.258	1.3	NA	± 20 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Analyzed:**	6/19/14 12:23
Sample Matrix:	Water		

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	R-MS-12
Lab Code:	RQ1406793-05	**File ID:**	I:\ACQUDATA\msvoa12\Data\061914\M6687.D\

Analytical Method: 8260C

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1406793-03	I:\ACQUDATA\msvoa12\Data\061914\M6684.D\	6/19/14 10:46
Duplicate Lab Control Sample	RQ1406793-04	I:\ACQUDATA\msvoa12\Data\061914\M6685.D\	6/19/14 11:18
TB-060914	R1404414-014	I:\ACQUDATA\msvoa12\Data\061914\M6690.D\	6/19/14 13:58
MRC-SW9A-060914	R1404414-012	I:\ACQUDATA\msvoa12\Data\061914\M6691.D\	6/19/14 14:29
MRC-SW1A-060914	R1404414-001	I:\ACQUDATA\msvoa12\Data\061914\M6692.D\	6/19/14 15:02
MRC-SW2A-060914	R1404414-002	I:\ACQUDATA\msvoa12\Data\061914\M6693.D\	6/19/14 15:34
MRC-SW5A1-060914	R1404414-003	I:\ACQUDATA\msvoa12\Data\061914\M6694.D\	6/19/14 16:06
MRC-SW5A2-060914	R1404414-004	I:\ACQUDATA\msvoa12\Data\061914\M6695.D\	6/19/14 16:39
MRC-SW5B-060914	R1404414-005	I:\ACQUDATA\msvoa12\Data\061914\M6696.D\	6/19/14 17:11
MRC-SW6A-060914	R1404414-006	I:\ACQUDATA\msvoa12\Data\061914\M6697.D\	6/19/14 17:44
MRC-SW6B-060914	R1404414-007	I:\ACQUDATA\msvoa12\Data\061914\M6698.D\	6/19/14 18:16
MRC-SW7A-060914	R1404414-008	I:\ACQUDATA\msvoa12\Data\061914\M6699.D\	6/19/14 18:48
MRC-SW7B-060914	R1404414-009	I:\ACQUDATA\msvoa12\Data\061914\M6700.D\	6/19/14 19:20
MRC-SW8A-060914	R1404414-010	I:\ACQUDATA\msvoa12\Data\061914\M6701.D\	6/19/14 19:53
MRC-SW8B-060914	R1404414-011	I:\ACQUDATA\msvoa12\Data\061914\M6702.D\	6/19/14 20:25
MRC-SW9B-060914	R1404414-013	I:\ACQUDATA\msvoa12\Data\061914\M6703.D\	6/19/14 20:57

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	6/19/14 12:23
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1406793-05	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6687.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U	1.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.25	
76-13-1	1,1,2-Trichlorotrifluoroethane	1.0	U	1.0	0.31	
75-34-3	1,1-Dichloroethane (1,1-DCA)	1.0	U	1.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	1.0	U	1.0	0.57	
563-58-6	1,1-Dichloropropene	1.0	U	1.0	0.29	
87-61-6	1,2,3-Trichlorobenzene	1.0	U	1.0	0.82	
96-18-4	1,2,3-Trichloropropane	1.0	U	1.0	0.70	
120-82-1	1,2,4-Trichlorobenzene	**0.30**	J	1.0	0.23	
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.20	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	2.0	U	2.0	0.74	
106-93-4	1,2-Dibromoethane	1.0	U	1.0	0.24	
95-50-1	1,2-Dichlorobenzene	1.0	U	1.0	0.21	
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.36	
78-87-5	1,2-Dichloropropane	1.0	U	1.0	0.20	
541-73-1	1,3-Dichlorobenzene	1.0	U	1.0	0.20	
142-28-9	1,3-Dichloropropane	1.0	U	1.0	0.27	
106-46-7	1,4-Dichlorobenzene	1.0	U	1.0	0.20	
594-20-7	2,2-Dichloropropane	1.0	U	1.0	0.27	
78-93-3	2-Butanone (MEK)	5.0	U	5.0	0.81	
110-75-8	2-Chloroethyl Vinyl Ether	1.0	U	1.0	0.44	
95-49-8	2-Chlorotoluene	1.0	U	1.0	0.20	
591-78-6	2-Hexanone	5.0	U	5.0	1.7	
75-65-0	tert-Butyl Alcohol	40	U	40	11	
106-43-4	4-Chlorotoluene	1.0	U	1.0	0.24	
99-87-6	4-Isopropyltoluene	1.0	U	1.0	0.20	
108-10-1	4-Methyl-2-pentanone	5.0	U	5.0	0.67	
67-64-1	Acetone	5.0	U	5.0	1.3	
71-43-2	Benzene	1.0	U	1.0	0.20	
108-86-1	Bromobenzene	1.0	U	1.0	0.28	
74-97-5	Bromochloromethane	1.0	U	1.0	0.32	
75-27-4	Bromodichloromethane	1.0	U	1.0	0.32	
75-25-2	Bromoform	1.0	U	1.0	0.42	
74-83-9	Bromomethane	**0.38**	J	1.0	0.29	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	6/19/14 12:23
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1406793-05	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6687.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-15-0	Carbon Disulfide	1.0	U	1.0	0.22	
56-23-5	Carbon Tetrachloride	1.0	U	1.0	0.45	
108-90-7	Chlorobenzene	1.0	U	1.0	0.29	
75-00-3	Chloroethane	1.0	U	1.0	0.24	
67-66-3	Chloroform	1.0	U	1.0	0.25	
74-87-3	Chloromethane	1.0	U	1.0	0.21	
124-48-1	Dibromochloromethane	1.0	U	1.0	0.31	
74-95-3	Dibromomethane	1.0	U	1.0	0.32	
75-71-8	Dichlorodifluoromethane (CFC 12)	1.0	U	1.0	0.46	
75-09-2	Methylene Chloride	1.0	U	1.0	0.32	
108-20-3	Diisopropyl Ether	1.0	U	1.0	0.20	
637-92-3	Ethyl tert-Butyl Ether	1.0	U	1.0	0.20	
100-41-4	Ethylbenzene	1.0	U	1.0	0.20	
87-68-3	Hexachlorobutadiene	2.0	U	2.0	0.62	
98-82-8	Isopropylbenzene (Cumene)	1.0	U	1.0	0.20	
1634-04-4	Methyl tert-Butyl Ether	1.0	U	1.0	0.29	
91-20-3	Naphthalene	**0.26**	J	1.0	0.20	
100-42-5	Styrene	1.0	U	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	0.30	
108-88-3	Toluene	1.0	U	1.0	0.20	
79-01-6	Trichloroethene (TCE)	1.0	U	1.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	1.0	U	1.0	0.20	
108-05-4	Vinyl Acetate	2.0	U	2.0	1.1	
75-01-4	Vinyl Chloride	1.0	U	1.0	0.32	
1330-20-7	Xylenes, Total	3.0	U	3.0	0.53	
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	1.0	U	1.0	0.24	
179601-23-1	m,p-Xylenes	2.0	U	2.0	0.33	
104-51-8	n-Butylbenzene	1.0	U	1.0	0.21	
103-65-1	n-Propylbenzene	1.0	U	1.0	0.20	
95-47-6	o-Xylene	1.0	U	1.0	0.20	
135-98-8	sec-Butylbenzene	1.0	U	1.0	0.27	
994-05-8	tert-Amyl Methyl Ether	1.0	U	1.0	0.20	
98-06-6	tert-Butylbenzene	1.0	U	1.0	0.20	
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.33	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	6/19/14 12:23
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1406793-05	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	397695
Data File Name:	I:\ACQUDATA\msvoa12\Data\061914\M6687.D\	**Instrument Name:**	R-MS-12
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-02-6	trans-1,3-Dichloropropene	1.0	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	101	85-122	6/19/14 12:23	
Dibromofluoromethane	106	89-119	6/19/14 12:23	
Toluene-d8	102	87-121	6/19/14 12:23	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/19/14

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 397695

Analyte Name	Lab Control Sample RQ1406793-03 Result	Spike Amount	% Rec	Duplicate Lab Control Sample RQ1406793-04 Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	20.4	20.0	102	19.3	20.0	96	79 - 119	5	30
1,1,1-Trichloroethane (TCA)	23.4	20.0	117	21.6	20.0	108	71 - 123	8	30
1,1,2,2-Tetrachloroethane	21.4	20.0	107	20.0	20.0	100	74 - 127	6	30
1,1,2-Trichlorotrifluoroethane	22.3	20.0	112	20.5	20.0	102	64 - 136	9	30
1,1-Dichloroethane (1,1-DCA)	22.8	20.0	114	21.1	20.0	106	76 - 128	8	30
1,1-Dichloroethene (1,1-DCE)	23.9	20.0	120	22.3	20.0	112	74 - 135	7	30
1,1-Dichloropropene	23.2	20.0	116	21.1	20.0	105	74 - 136	9	30
1,2,3-Trichlorobenzene	23.0	20.0	115	21.0	20.0	105	60 - 144	9	30
1,2,3-Trichloropropane	21.7	20.0	108	20.9	20.0	105	68 - 136	4	30
1,2,4-Trichlorobenzene	22.9	20.0	114	21.5	20.0	108	60 - 141	6	30
1,2,4-Trimethylbenzene	22.1	20.0	111	20.7	20.0	103	76 - 126	7	30
1,2-Dibromo-3-chloropropane (DBCP)	20.4	20.0	102	19.2	20.0	96	69 - 135	6	30
1,2-Dibromoethane	20.4	20.0	102	20.2	20.0	101	81 - 123	1	30
1,2-Dichlorobenzene	21.2	20.0	106	19.7	20.0	98	80 - 119	8	30
1,2-Dichloroethane	23.3	20.0	116	21.7	20.0	109	72 - 130	7	30
1,2-Dichloropropane	21.6	20.0	108	20.7	20.0	103	80 - 119	5	30
1,3-Dichlorobenzene	21.2	20.0	106	19.7	20.0	99	79 - 121	7	30
1,3-Dichloropropane	22.3	20.0	112	20.8	20.0	104	82 - 116	7	30
1,4-Dichlorobenzene	21.4	20.0	107	20.2	20.0	101	79 - 119	6	30
2,2-Dichloropropane	22.6	20.0	113	20.5	20.0	103	59 - 135	10	30
2-Butanone (MEK)	22.7	20.0	113	23.1	20.0	115	66 - 129	2	30
2-Chloroethyl Vinyl Ether	19.4	20.0	97	18.8	20.0	94	58 - 139	3	30
2-Chlorotoluene	22.7	20.0	113	21.2	20.0	106	71 - 125	7	30
2-Hexanone	21.9	20.0	109	21.0	20.0	105	61 - 131	4	30
tert-Butyl Alcohol	483	400	121	423	400	106	63 - 142	13	30
4-Chlorotoluene	23.0	20.0	115	20.9	20.0	105	73 - 127	10	30
4-Isopropyltoluene	22.6	20.0	113	20.9	20.0	104	74 - 130	8	30
4-Methyl-2-pentanone	20.0	20.0	100	20.3	20.0	102	68 - 129	2	30
Acetone	23.2	20.0	116	24.0	20.0	120	51 - 146	3	30
Benzene	21.8	20.0	109	20.4	20.0	102	76 - 118	7	30
Bromobenzene	20.7	20.0	104	19.5	20.0	98	79 - 121	6	30
Bromochloromethane	21.4	20.0	107	21.3	20.0	107	81 - 126	<1	30
Bromodichloromethane	22.0	20.0	110	20.4	20.0	102	79 - 122	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/19/14

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 397695

Analyte Name	Lab Control Sample RQ1406793-03 Result	Spike Amount	% Rec	Duplicate Lab Control Sample RQ1406793-04 Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bromoform	19.3	20.0	96	18.0	20.0	90	65 - 138	7	30
Bromomethane	19.9	20.0	100	19.5	20.0	98	41 - 159	2	30
Carbon Disulfide	19.2	20.0	96	19.1	20.0	95	63 - 141	<1	30
Carbon Tetrachloride	21.9	20.0	109	19.9	20.0	99	66 - 128	10	30
Chlorobenzene	21.1	20.0	105	19.7	20.0	98	80 - 121	7	30
Chloroethane	18.6	20.0	93	17.7	20.0	88	71 - 128	5	30
Chloroform	22.7	20.0	113	21.5	20.0	107	76 - 120	6	30
Chloromethane	21.8	20.0	109	20.2	20.0	101	64 - 140	7	30
Dibromochloromethane	20.0	20.0	100	19.5	20.0	97	79 - 125	3	30
Dibromomethane	22.0	20.0	110	20.8	20.0	104	79 - 120	5	30
Dichlorodifluoromethane (CFC 12)	26.5	20.0	132	24.2	20.0	121	60 - 150	9	30
Methylene Chloride	20.7	20.0	103	19.8	20.0	99	73 - 122	4	30
Diisopropyl Ether	18.5	20.0	92	19.1	20.0	96	76 - 131	4	30
Ethyl tert-Butyl Ether	18.5	20.0	92	19.2	20.0	96	77 - 126	4	30
Ethylbenzene	19.8	20.0	99	18.3	20.0	92	76 - 120	8	30
Hexachlorobutadiene	24.7	20.0	124	21.8	20.0	109	57 - 147	13	30
Isopropylbenzene (Cumene)	22.4	20.0	112	20.8	20.0	104	76 - 126	7	30
Methyl tert-Butyl Ether	24.1	20.0	120	22.6	20.0	113	73 - 131	6	30
Naphthalene	24.1	20.0	120	22.2	20.0	111	73 - 133	8	30
Styrene	20.7	20.0	103	19.7	20.0	99	81 - 122	5	30
Tetrachloroethene (PCE)	20.9	20.0	105	19.4	20.0	97	69 - 124	8	30
Toluene	21.2	20.0	106	19.8	20.0	99	77 - 120	7	30
Trichloroethene (TCE)	20.6	20.0	103	19.0	20.0	95	76 - 123	8	30
Trichlorofluoromethane (CFC 11)	22.8	20.0	114	21.4	20.0	107	69 - 130	6	30
Vinyl Acetate	19.0	20.0	95	17.5	20.0	88	43 - 165	8	30
Vinyl Chloride	19.9	20.0	100	18.4	20.0	92	69 - 136	8	30
Xylenes, Total	61.9	60.0	103	58.3	60.0	97	78 - 121	6	30
cis-1,2-Dichloroethene	20.7	20.0	104	19.8	20.0	99	80 - 121	5	30
cis-1,3-Dichloropropene	21.4	20.0	107	20.3	20.0	101	77 - 125	5	30
m,p-Xylenes	41.8	40.0	104	39.3	40.0	98	78 - 123	6	30
n-Butylbenzene	23.1	20.0	116	21.5	20.0	108	69 - 135	7	30
n-Propylbenzene	22.4	20.0	112	21.0	20.0	105	76 - 125	7	30
o-Xylene	20.1	20.0	100	18.9	20.0	95	77 - 131	6	30

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/19/14

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 397695

Analyte Name	Lab Control Sample RQ1406793-03 Result	Spike Amount	% Rec	Duplicate Lab Control Sample RQ1406793-04 Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
sec-Butylbenzene	22.3	20.0	111	20.4	20.0	102	72 - 130	9	30
tert-Amyl Methyl Ether	19.0	20.0	95	19.4	20.0	97	76 - 123	2	30
tert-Butylbenzene	21.7	20.0	108	20.2	20.0	101	73 - 124	7	30
trans-1,2-Dichloroethene	22.0	20.0	110	20.8	20.0	104	78 - 124	6	30
trans-1,3-Dichloropropene	22.2	20.0	111	20.6	20.0	103	72 - 123	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/19/14 10:13

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\msvoa12\Data\061914\M6683.D\
Instrument ID: R-MS-12
Analytical Method: 8260C

Lab Code: RQ1406793-02
Analysis Lot: 397695
Signal ID:

		1,4-Dichlorobenzene-d4		1,4-Difluorobenzene		Chlorobenzene-d5	
		Area	RT	Area	RT	Area	RT
	Results ==>	685,670	10.75	1,457,701	5.45	1,306,203	8.75
	Upper Limit ==>	1,371,340	11.25	2,915,402	5.95	2,612,406	9.25
	Lower Limit ==>	342,835	10.25	728,851	4.95	653,102	8.25
	ICAL Result ==>	748,434	10.75	1,534,701	5.46	1,409,806	8.75
Associated Analyses							
Lab Control Sample	RQ1406793-03	673,028	10.75	1,472,505	5.45	1,330,087	8.75
Duplicate Lab Control Sample	RQ1406793-04	684,449	10.75	1,484,210	5.45	1,342,235	8.74
Method Blank	RQ1406793-05	651,892	10.75	1,468,303	5.45	1,313,705	8.74
TB-060914	R1404414-014	630,654	10.75	1,462,004	5.45	1,316,776	8.75
MRC-SW9A-060914	R1404414-012	632,030	10.75	1,459,529	5.46	1,309,498	8.75
MRC-SW1A-060914	R1404414-001	628,563	10.75	1,443,644	5.45	1,304,198	8.74
MRC-SW2A-060914	R1404414-002	623,689	10.75	1,442,694	5.45	1,297,287	8.74
MRC-SW5A1-060914	R1404414-003	626,946	10.75	1,424,418	5.45	1,277,146	8.75
MRC-SW5A2-060914	R1404414-004	624,804	10.75	1,426,240	5.45	1,275,014	8.75
MRC-SW5B-060914	R1404414-005	622,159	10.75	1,433,367	5.45	1,280,477	8.74
MRC-SW6A-060914	R1404414-006	617,133	10.75	1,409,784	5.45	1,276,061	8.74
MRC-SW6B-060914	R1404414-007	614,000	10.75	1,400,685	5.45	1,266,075	8.75
MRC-SW7A-060914	R1404414-008	614,634	10.75	1,383,326	5.46	1,257,330	8.74
MRC-SW7B-060914	R1404414-009	607,687	10.75	1,406,496	5.45	1,252,926	8.74
MRC-SW8A-060914	R1404414-010	610,596	10.75	1,393,829	5.45	1,256,182	8.74
MRC-SW8B-060914	R1404414-011	602,598	10.75	1,388,205	5.45	1,224,739	8.74
MRC-SW9B-060914	R1404414-013	599,022	10.75	1,375,016	5.45	1,229,068	8.75

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/19/14 10:13

Internal Standard Area and RT Summary
Volatile Organic Compounds by GC/MS

File ID: I:\ACQUDATA\msvoa12\Data\061914\M6683.D\
Instrument ID: R-MS-12
Analytical Method: 8260C

Lab Code: RQ1406793-02
Analysis Lot: 397695
Signal ID:

		Pentafluorobenzene	
		Area	**RT**
	Results ==>	890,577	4.25
	Upper Limit ==>	1,781,154	4.75
	Lower Limit ==>	445,289	3.75
	ICAL Result ==>	976,069	4.25
Associated Analyses			
Lab Control Sample	RQ1406793-03	911,981	4.25
Duplicate Lab Control Sample	RQ1406793-04	922,195	4.25
Method Blank	RQ1406793-05	906,122	4.25
TB-060914	R1404414-014	908,284	4.26
MRC-SW9A-060914	R1404414-012	891,681	4.26
MRC-SW1A-060914	R1404414-001	885,224	4.25
MRC-SW2A-060914	R1404414-002	881,901	4.25
MRC-SW5A1-060914	R1404414-003	865,780	4.25
MRC-SW5A2-060914	R1404414-004	871,127	4.26
MRC-SW5B-060914	R1404414-005	869,642	4.25
MRC-SW6A-060914	R1404414-006	872,497	4.25
MRC-SW6B-060914	R1404414-007	853,380	4.25
MRC-SW7A-060914	R1404414-008	842,255	4.25
MRC-SW7B-060914	R1404414-009	849,523	4.25
MRC-SW8A-060914	R1404414-010	844,447	4.25
MRC-SW8B-060914	R1404414-011	834,316	4.25
MRC-SW9B-060914	R1404414-013	831,904	4.26

Results flagged with an asterisk (*) indicate values outside control criteria.

SDG R1404414

SAMPLE ID MRC-SW6A-060914

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST	IS AMOUNT (NG)	Final Volume (ML)	AVE RRF	CONCENTRATION ug/L
1409784	1	4793	50	5	0.3273	0.52
				Sample Volume (ML)		
				5		

Trichloroethene = 0.52 ug/L

Quantitation Report (Not Reviewed)

Sample : R1404414-006|1.0
Data File: I:\ACQUDATA\MSVOA12\DATA\061914\M6697.D
Misc : TETRA 11423 T4 MRC-SWGA-060914
Acq On : 19 Jun 2014 5:44 pm
Operator : K.RUEST
InstName : MSVOA-12

Quant Method : I:\ACQUDATA\MSVOA12\METHODS\W061314.M
Quant Title : MS#12 - 8260B WATERS 10mL Purge
Quant Time: Jun 19 17:59:10 2014
QLast Update : Sat Jun 14 17:33:54 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Pentafluorobenzene	4.249	168	872497	50.00	ppb		0.00
43) 1,4-Difluorobenzene	5.450	114	1409784	50.00	ppb		0.00
71) d5-Chlorobenzene	8.742	117	1276061	50.00	ppb		0.00
86) 1,4-Dichlorobenzene-d4	10.748	152	617133	50.00	ppb		0.00
System Monitoring Compounds							
45) surr4,Dibrflmethane	4.158	113	420670	52.08	ppb		0.00
Spiked Amount 50.000	Range 89 - 119		Recovery = 104.16%				
48) surr1,1,2-dichloroetha...	4.664	65	493044	57.46	ppb		0.00
Spiked Amount 50.000	Range 78 - 122		Recovery = 114.92%				
65) SURR3,Toluene-d8	7.322	98	1785789	51.04	ppb		0.00
Spiked Amount 50.000	Range 87 - 121		Recovery = 102.08%				
70) SURR2,BFB	9.791	95	661240	50.41	ppb		0.00
Spiked Amount 50.000	Range 85 - 122		Recovery = 100.82%				
Target Compounds							Qvalue
~~42) Acrolein~~	~~2.000~~	~~56~~	~~296~~	~~0.45~~	~~ppb~~		~~83~~
15) Acetone	2.048	43	2700	1.57	ppb		87
~~16) 2-Propanol~~	~~2.213~~	~~45~~	~~294~~	~~0.90~~	~~ppb~~		~~59~~
~~17) Iodomethane~~	~~2.146~~	~~142~~	~~350~~	~~1.60~~	~~ppb~~		~~97~~
~~20) Allyl Chloride~~	~~2.207~~	~~76~~	~~3060~~	~~0.60~~	~~ppb~~	~~#~~	~~1~~
~~35) 2-Butanone~~	~~3.579~~	~~43~~	~~852~~	~~0.35~~	~~ppb~~	~~#~~	~~54~~
54) Trichloroethene	5.834	130	4793	0.52	ppb	#	86
~~61) 2-Nitropropane~~	~~6.804~~	~~41~~	~~302~~	~~0.20~~	~~ppb~~	~~#~~	~~48~~
~~90) Cyclohexanone~~	~~9.742~~	~~55~~	~~210~~	~~0.61~~	~~ppb~~	~~#~~	~~60~~

(#) = qualifier out of range (m) = manual integration (+) = signals summed

KR 6/25/14

DL 6/25/14

ALS Environmental

PESTICIDES / PCB'S
QC SUMMARY

ALS Environmental - Rochester, NY
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO **Service Request:** R1404414

Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247 **Date Analyzed:** 6/23/14 12:41

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062314\DK243.D\ **Analytical Method:** 680

Instrument ID: R-MS-52 **Analysis Lot:** 398720

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	39.84	212316	Pass
68	69	0.00	2	0.00	0	Pass
69	198	0.00	100	51.49	274389	Pass
70	69	0.00	2	0.48	1320	Pass
127	198	40	60	52.99	282368	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	532864	Pass
199	198	5	9	6.64	35387	Pass
275	198	10	30	20.55	109528	Pass
365	198	1	100	2.81	14979	Pass
441	443	0.01	100	75.53	53494	Pass
442	198	40	100	63.04	335928	Pass
443	442	17	23	21.08	70824	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
SSTD000	CAL. 00 STD	I:\ACQUDATA\5973B\DATA\062314\DK246.D\	6/23/14 13:53	
SSTD00	CAL. 0 STD	I:\ACQUDATA\5973B\DATA\062314\DK247.D\	6/23/14 14:22	
SSTD005	CAL. 0.5 STD	I:\ACQUDATA\5973B\DATA\062314\DK248.D\	6/23/14 14:51	
SSTD010	CAL. 1.0 STD	I:\ACQUDATA\5973B\DATA\062314\DK249.D\	6/23/14 15:21	
SSTD015	CAL. 1.5 STD	I:\ACQUDATA\5973B\DATA\062314\DK250.D\	6/23/14 15:50	
SSTD020	CAL, 2.0 STD	I:\ACQUDATA\5973B\DATA\062314\DK251.D\	6/23/14 16:20	
SSTD030	CAL. 3.0 STD	I:\ACQUDATA\5973B\DATA\062314\DK252.D\	6/23/14 16:49	

Response Factor Report 5973-B

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Initial Calibration

Calibration Files
00 =DK246.D 0 =DK247.D 0.5 =DK248.D
1.0 =DK249.D 1.5 =DK250.D 2.0 =DK251.D 3.0=DK252.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
1)	IR	d10-Phenanthrene	----------ISTD----------							
2)	IR	d12-Chrysene	----------ISTD----------							
3)	TCM	Total Monochlorobip	0.670	0.965	0.921	0.984	0.946	0.864	0.881	12.47
4)	TCM	Total Dichlorobiphe	0.499	0.707	0.670	0.653	0.665	0.594	0.624	11.27
5)	SC	SURR1, gamma-BHC	0.117	0.136	0.136	0.141	0.153	0.141	0.138	7.97
6)	TCM	Total Trichlorobiph	0.336	0.397	0.428	0.424	0.460	0.418	0.409	9.35
7)	TCM	Total Tetrachlorobi	0.241	0.291	0.268	0.285	0.275	0.252	0.265	7.52
8)	TC	RT #104 (CL5)	0.250	0.191	0.185	0.180	0.191	0.167	0.190	15.03
9)	TCM	Total Pentachlorobi	0.175	0.209	0.202	0.202	0.210	0.200	0.199	6.02
10)	TCM	Total Hexachlorobip	0.154	0.178	0.182	0.185	0.195	0.182	0.179	6.95
11)	TC	RT #77 (CL4)	0.460	0.490	0.498	0.497	0.518	0.476	0.485	4.57
12)	TCM	Total Heptachlorobi	0.126	0.171	0.154	0.164	0.164	0.154	0.154	9.64
13)	SC	SURR2, 4-4'-DDT		0.209	0.241	0.256	0.324	0.340	0.289	21.59# L.R
14)	TCM	Total Octachlorobip	0.085	0.092	0.094	0.094	0.100	0.092	0.093	4.69
15)	TC	Total Nonachlorobip	0.047	0.061	0.065	0.065	0.068	0.065	0.062	11.19
16)	TCM	Total Decachlorobip	0.029	0.037	0.040	0.043	0.041	0.044	0.040	13.54
17)	L1	CL1 - #1							0.000	-1.00
18)	L1	CL1 - #2							0.000	-1.00
19)	L1	CL1 - #3							0.000	-1.00
20)	L1	CL1 - #4							0.000	-1.00
21)	L1	CL1 - #5							0.000	-1.00
22)	L1	CL1 - #6							0.000	-1.00
23)	L1	CL1 - #7							0.000	-1.00
24)	L1	CL1 - #8							0.000	-1.00
25)	L1	CL1 - #9							0.000	-1.00
26)	L1	CL1 - #10							0.000	-1.00
27)	L1	MonoCB - Total	0.670	0.965	0.921	0.984	0.946	0.864	0.881	12.47
28)	L2	CL2 - #1							0.000	-1.00
29)	L2	CL2 - #2							0.000	-1.00
30)	L2	CL2 - #3							0.000	-1.00
31)	L2	CL2 - #4							0.000	-1.00
32)	L2	CL2 - #5							0.000	-1.00
33)	L2	CL2 - #6							0.000	-1.00
34)	L2	CL2 - #7							0.000	-1.00
35)	L2	CL2 - #8							0.000	-1.00
36)	L2	CL2 - #9							0.000	-1.00
37)	L2	CL2 - #10							0.000	-1.00
38)	L2	DiCB - Total	0.499	0.707	0.670	0.653	0.665	0.594	0.624	11.27
39)	L3	CL3 - #1							0.000	-1.00
40)	L3	CL3 - #2							0.000	-1.00
41)	L3	CL3 - #3							0.000	-1.00
42)	L3	CL3 - #4							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

05486

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Initial Calibration

Calibration Files
00 =DK246.D 0 =DK247.D 0.5 =DK248.D
1.0 =DK249.D 1.5 =DK250.D 2.0 =DK251.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
43)	L3	CL3 - #5							0.000	-1.00
44)	L3	CL3 - #6							0.000	-1.00
45)	L3	CL3 - #7							0.000	-1.00
46)	L3	CL3 - #8							0.000	-1.00
47)	L3	CL3 - #9							0.000	-1.00
48)	L3	CL3 - #10							0.000	-1.00
49)	L3	CL3 - #11							0.000	-1.00
50)	L3	CL3 - #12							0.000	-1.00
51)	L3	CL3 - #13							0.000	-1.00
52)	L3	TriCB - Total	0.336	0.397	0.428	0.424	0.460	0.418	0.409	9.35
53)	L4	CL4 - #1							0.000	-1.00
54)	L4	CL4 - #2							0.000	-1.00
55)	L4	CL4 - #3							0.000	-1.00
56)	L4	CL4 - #4							0.000	-1.00
57)	L4	CL4 - #5							0.000	-1.00
58)	L4	CL4 - #6							0.000	-1.00
59)	L4	CL4 - #7							0.000	-1.00
60)	L4	CL4 - #8							0.000	-1.00
61)	L4	CL4 - #9							0.000	-1.00
62)	L4	CL4 - #10							0.000	-1.00
63)	L4	CL4 - #11							0.000	-1.00
64)	L4	CL4 - #12							0.000	-1.00
65)	L4	CL4 - #13							0.000	-1.00
66)	L4	CL4 - #14							0.000	-1.00
67)	L4	CL4 - #15							0.000	-1.00
68)	L4	TetraCB - Total	0.241	0.291	0.268	0.285	0.275	0.252	0.265	7.52
69)	L5	CL5 - #1							0.000	-1.00
70)	L5	CL5 - #2							0.000	-1.00
71)	L5	CL5 - #3							0.000	-1.00
72)	L5	CL5 - #4							0.000	-1.00
73)	L5	CL5 - #5							0.000	-1.00
74)	L5	CL5 - #6							0.000	-1.00
75)	L5	CL5 - #7							0.000	-1.00
76)	L5	CL5 - #8							0.000	-1.00
77)	L5	CL5 - #9							0.000	-1.00
78)	L5	CL5 - #10							0.000	-1.00
79)	L5	CL5 - #11							0.000	-1.00
80)	L5	CL5 - #12							0.000	-1.00
81)	L5	CL5 - #13							0.000	-1.00
82)	L5	CL5 - #14							0.000	-1.00
83)	L5	CL5 - #15							0.000	-1.00
84)	L5	PentaCB - Total	0.175	0.209	0.202	0.202	0.210	0.200	0.199	6.02
85)	L6	CL6 - #1							0.000	-1.00
86)	L6	CL6 - #2							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

00487

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Initial Calibration

Calibration Files
00 =DK246.D 0 =DK247.D 0.5 =DK248.D
1.0 =DK249.D 1.5 =DK250.D 2.0 =DK251.D

		Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
87)	L6	CL6 - #3							0.000	-1.00
88)	L6	CL6 - #4							0.000	-1.00
89)	L6	CL6 - #5							0.000	-1.00
90)	L6	CL6 - #6							0.000	-1.00
91)	L6	CL6 - #7							0.000	-1.00
92)	L6	CL6 - #8							0.000	-1.00
93)	L6	CL6 - #9							0.000	-1.00
94)	L6	CL6 - #10							0.000	-1.00
95)	L6	CL6 - #11							0.000	-1.00
96)	L6	CL6 - #12							0.000	-1.00
97)	L6	CL6 - #13							0.000	-1.00
98)	L6	CL6 - #14							0.000	-1.00
99)	L6	CL6 - #15							0.000	-1.00
100)	L6	HexaCB - Total	0.154	0.178	0.182	0.185	0.195	0.182	0.179	6.95
101)	L7	CL7 - #1							0.000	-1.00
102)	L7	CL7 - #2							0.000	-1.00
103)	L7	CL7 - #3							0.000	-1.00
104)	L7	CL7 - #4							0.000	-1.00
105)	L7	CL7 - #5							0.000	-1.00
106)	L7	CL7 - #6							0.000	-1.00
107)	L7	CL7 - #7							0.000	-1.00
108)	L7	CL7 - #8							0.000	-1.00
109)	L7	CL7 - #9							0.000	-1.00
110)	L7	CL7 - #10							0.000	-1.00
111)	L7	HeptaCB - Total	0.126	0.171	0.154	0.164	0.164	0.154	0.154	9.64
112)	L8	CL8 - #1							0.000	-1.00
113)	L8	CL8 - #2							0.000	-1.00
114)	L8	CL8 - #3							0.000	-1.00
115)	L8	CL8 - #4							0.000	-1.00
116)	L8	CL8 - #5							0.000	-1.00
117)	L8	CL8 - #6							0.000	-1.00
118)	L8	CL8 - #7							0.000	-1.00
119)	L8	CL8 - #8							0.000	-1.00
120)	L8	OctaCB - Total	0.085	0.092	0.094	0.094	0.100	0.092	0.093	4.69
121)	L9	CL9 - #1							0.000	-1.00
122)	L9	CL9 - #2							0.000	-1.00
123)	L9	CL9 - #3							0.000	-1.00
124)	L9	CL9 - #4							0.000	-1.00
125)	L9	CL9 - #5							0.000	-1.00
126)	L9	NonaCB - Total	0.047	0.061	0.065	0.065	0.068	0.065	0.062	11.19
127)	L10	CL10 - #1							0.000	-1.00
128)	L10	CL10 - #2							0.000	-1.00
129)	L10	CL10 - #3							0.000	-1.00
130)	L10	CL10 - #4							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

00488

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Initial Calibration

Calibration Files
00 =DK246.D 0 =DK247.D 0.5 =DK248.D
1.0 =DK249.D 1.5 =DK250.D 2.0 =DK251.D

Compound	00	0	0.5	1.0	1.5	2.0	Avg	%RSD
131) L10 CL10 - #5							0.000	-1.00
132) L10 DecaCB - Total	0.029	0.037	0.040	0.043	0.041	0.044	0.040	13.54

(#) = Out of Range ### Number of calibration levels exceeded format ###

00489

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK249.D Vial: 6
Acq On : 23 Jun 2014 3:21 pm Operator: J.Wu
Sample : INITIAL CALIBRATION Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	100	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	100	0.00
3	TCM	Total Monochlorobiphenyls	0.881	0.984	-11.7	100	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.653	-4.6	100	0.00
5	SC	SURR1, gamma-BHC	0.138	0.141	-2.2	100	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.424	-3.7	100	0.00
7	TCM	Total Tetrachlorobiphenyls	0.265	0.285	-7.5	100	0.00
8	TC	RT #104 (CL5)	0.190	0.180	5.3	100	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.202	-1.5	100	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.185	-3.4	100	0.00
11	TC	RT #77 (CL4)	0.485	0.497	-2.5	100	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.164	-6.5	100	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.256	11.4	100	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.094	-1.1	100	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.065	-4.8	100	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.043	-7.5	100	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

00450

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK249A.D Vial: 6
Acq On : 23 Jun 2014 3:21 pm Operator: J.Wu
Sample : INITIAL CALIBRATION Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

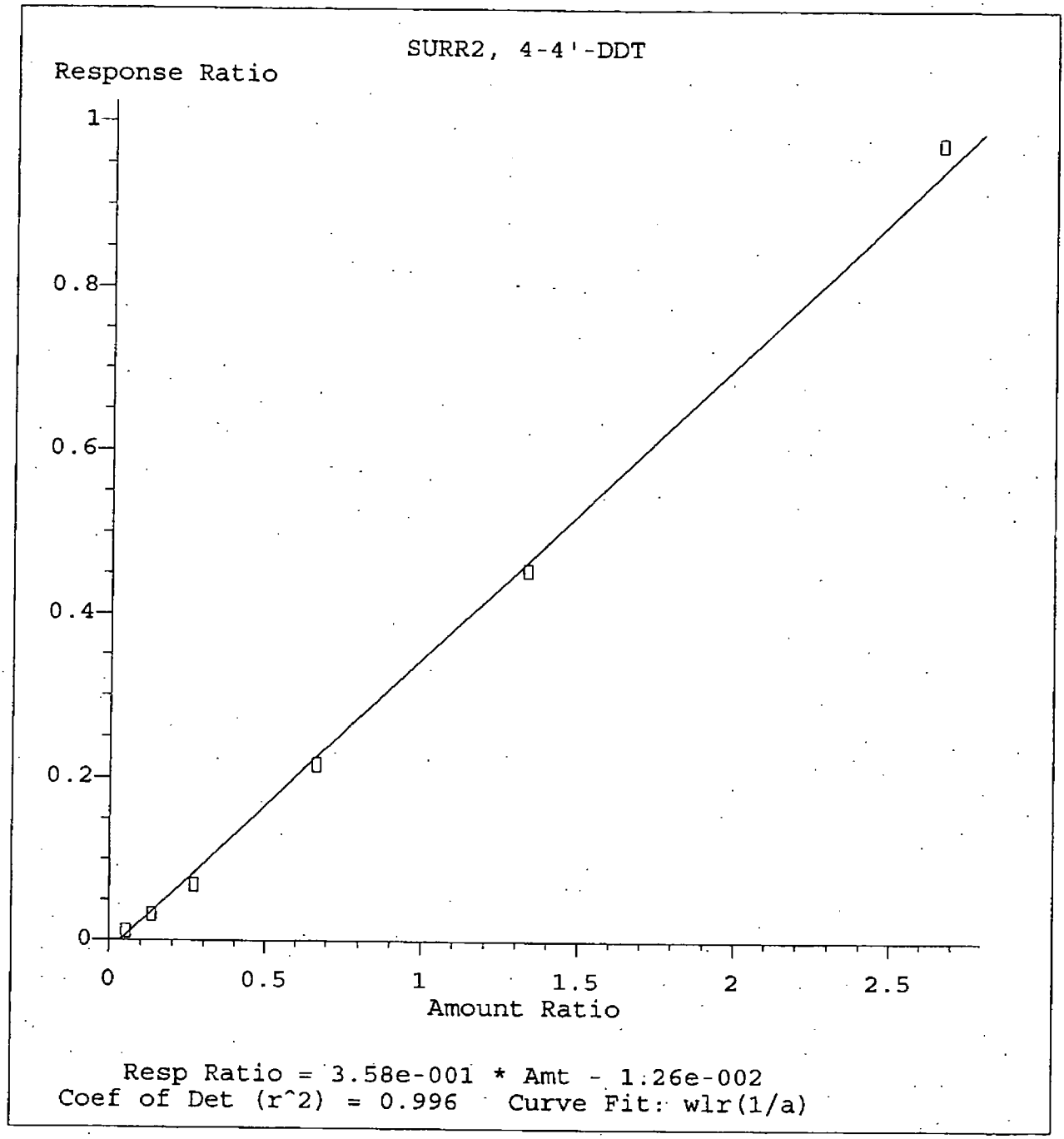
Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

for #13 L-R

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	100	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	100	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.112	-12.0	100	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.105	-5.0	100	0.00
5	SC	SURR1, gamma-BHC	0.200	0.204	-2.0	100	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.104	-4.0	100	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.215	-7.5	100	0.00
8	TC	RT #104 (CL5)	0.200	0.190	5.0	100	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.203	-1.5	100	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.207	-3.5	100	0.00
11	TC	RT #77 (CL4)	0.200	0.205	-2.5	100	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.318	-6.0	100	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.170	15.0	100	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.304	-1.3	100	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.422	-5.5	100	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.544	-8.8	100	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range



Method Name: I:\ACQUDATA\5973B\METHODS\6800623B.M
Calibration Table Last Updated: Mon Jun 23 17:13:26 2014

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK253.D Vial: 10
Acq On : 23 Jun 2014 5:19 pm Operator: J.Wu
Sample : ICV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB ICV Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #1 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	98	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	94	0.01
3	TCM	Total Monochlorobiphenyls	0.881	0.921	-4.5	88	0.01
4	TCM	Total Dichlorobiphenyls	0.624	0.661	-5.9	95	0.00
5	SC	SURR1, gamma-BHC	0.138	0.002	98.6#	1#	-0.14
6	TCM	Total Trichlorobiphenyls	0.409	0.454	-11.0	101	0.00
7	TCM	Total Tetrachlorobiphenyls	0.265	0.262	1.1	87	0.00
8	TC	RT #104 (CL5)	0.190	0.184	3.2	96	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.201	-1.0	94	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.174	2.8	88	0.00
11	TC	RT #77 (CL4)	0.485	0.501	-3.3	95	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.157	-1.9	90	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.000	100.0#	0#	-0.02
14	TCM	Total Octachlorobiphenyls	0.093	0.091	2.2	92	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.065	-4.8	94	0.01
16	TCM	Total Decachlorobiphenyl	0.040	0.042	-5.0	92	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/23/14 17:45

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062314\DK254.D\
Instrument ID: R-MS-52

Analytical Method: 680
Analysis Lot: 398720

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	37.94	175499	Pass
68	69	0.00	2	2.17	4927	N/A
69	198	0.00	100	49.12	227216	Pass
70	69	0.00	2	0.35	784	Pass
127	198	40	60	51.04	236096	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	462549	Pass
199	198	5	9	7.04	32552	Pass
275	198	10	30	23.37	108107	Pass
365	198	1	100	3.19	14741	Pass
441	443	0.01	100	78.75	59616	Pass
442	198	40	100	79.72	368725	Pass
443	442	17	23	20.53	75699	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1407158-10	I:\ACQUDATA\5973B\DATA\062314\DK255.D\	6/23/14 17:58	
Method Blank	RQ1406528-01	I:\ACQUDATA\5973B\DATA\062314\DK256.D\	6/23/14 18:27	
Lab Control Sample	RQ1406528-02	I:\ACQUDATA\5973B\DATA\062314\DK257.D\	6/23/14 18:57	
Duplicate Lab Control Sample	RQ1406528-03	I:\ACQUDATA\5973B\DATA\062314\DK258.D\	6/23/14 19:26	
MRC-SW5A1-060914	R1404414-003	I:\ACQUDATA\5973B\DATA\062314\DK259.D\	6/23/14 19:55	
MRC-SW6B-060914	R1404414-007	I:\ACQUDATA\5973B\DATA\062314\DK261.D\	6/23/14 20:54	
Continuing Cal. VerificationCCVA	RQ1407158-11	I:\ACQUDATA\5973B\DATA\062314\DK265.D\	6/23/14 22:50	

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK255.D Vial: 2
Acq On : 23 Jun 2014 5:58 pm Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB ICV Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #13 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	100	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	99	0.01
3	TCM	Total Monochlorobiphenyls	0.881	0.930	-5.6	93	0.01
4	TCM	Total Dichlorobiphenyls	0.624	0.667	-6.9	101	0.00
5	SC	SURR1, gamma-BHC	0.138	0.140	-1.4	98	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.427	-4.4	100	0.00
7	TCM	Total Tetrachlorobiphenyls	0.265	0.272	-2.6	95	0.00
8	TC	RT #104 (CL5)	0.190	0.180	5.3	99	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.200	-0.5	98	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.192	-7.3	102	0.00
11	TC	RT #77 (CL4)	0.485	0.456	6.0	91	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.167	-8.4	101	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.252	12.8	97	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.092	1.1	97	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.068	-9.7	102	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.043	-7.5	98	0.00
17	L1	CL1 - #1	0.000	0.930	0.0	0#	0.01
18	L1	CL1 - #2	0.000	0.948	0.0	0#	0.01
19	L1	CL1 - #3	0.000	0.948	0.0	0#	0.01
20	L1	CL1 - #4	0.000	0.948	0.0	0#	0.01
21	L1	CL1 - #5	0.000	0.948	0.0	0#	0.01
22	L1	CL1 - #6	0.000	0.948	0.0	0#	0.01
23	L1	CL1 - #7	0.000	0.948	0.0	0#	0.01
24	L1	CL1 - #8	0.000	0.948	0.0	0#	0.01
25	L1	CL1 - #9	0.000	0.948	0.0	0#	0.01
26	L1	CL1 - #10	0.000	0.948	0.0	0#	0.01
27	L1	MonoCB - Total	0.881	9.464	-974.2#	951#	-0.14
28	L2	CL2 - #1	0.000	0.676	0.0	0#	0.00
29	L2	CL2 - #2	0.000	0.676	0.0	0#	0.00
30	L2	CL2 - #3	0.000	0.676	0.0	0#	0.00
31	L2	CL2 - #4	0.000	0.676	0.0	0#	0.00
32	L2	CL2 - #5	0.000	0.676	0.0	0#	0.00
33	L2	CL2 - #6	0.000	0.676	0.0	0#	0.00
34	L2	CL2 - #7	0.000	0.676	0.0	0#	0.00
35	L2	CL2 - #8	0.000	0.676	0.0	0#	0.00
36	L2	CL2 - #9	0.000	0.676	0.0	0#	0.00
37	L2	CL2 - #10	0.000	0.676	0.0	0#	0.00
38	L2	DiCB - Total	0.624	6.761	-983.5#	1023#	-0.12
39	L3	CL3 - #1	0.000	0.430	0.0	0#	0.00
40	L3	CL3 - #2	0.000	0.430	0.0	0#	0.00
41	L3	CL3 - #3	0.000	0.430	0.0	0#	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK255.D Vial: 2
Acq On : 23 Jun 2014 5:58 pm Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB ICV Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #B L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	100	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	99	0.01
3	TCM	Total Monochlorobiphenyls	0.100	0.106	-6.0	93	0.01
4	TCM	Total Dichlorobiphenyls	0.100	0.107	-7.0	101	0.00
5	SC	SURR1, gamma-BHC	0.200	0.203	-1.5	98	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.105	-5.0	100	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.205	-2.5	95	0.00
8	TC	RT #104 (CL5)	0.200	0.190	5.0	99	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.201	-0.5	98	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.214	-7.0	102	0.00
11	TC	RT #77 (CL4)	0.200	0.188	6.0	91	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.325	-8.3	101	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.167	16.5	97	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.298	0.7	97	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.437	-9.2	102	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.541	-8.2	98	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	0.01
18	L1	CL1 - #2	0.100	0.000	100.0#	0	0.01
19	L1	CL1 - #3	0.100	0.000	100.0#	0	0.01
20	L1	CL1 - #4	0.100	0.000	100.0#	0	0.01
21	L1	CL1 - #5	0.100	0.000	100.0#	0	0.01
22	L1	CL1 - #6	0.100	0.000	100.0#	0	0.01
23	L1	CL1 - #7	0.100	0.000	100.0#	0	0.01
24	L1	CL1 - #8	0.100	0.000	100.0#	0	0.01
25	L1	CL1 - #9	0.100	0.000	100.0#	0	0.01
26	L1	CL1 - #10	0.100	0.000	100.0#	0	0.01
27	L1	MonoCB - Total	0.100	1.074	-974.0#	951	-0.14
28	L2	CL2 - #1	0.100	0.000	100.0#	0	0.00
29	L2	CL2 - #2	0.100	0.000	100.0#	0	0.00
30	L2	CL2 - #3	0.100	0.000	100.0#	0	0.00
31	L2	CL2 - #4	0.100	0.000	100.0#	0	0.00
32	L2	CL2 - #5	0.100	0.000	100.0#	0	0.00
33	L2	CL2 - #6	0.100	0.000	100.0#	0	0.00
34	L2	CL2 - #7	0.100	0.000	100.0#	0	0.00
35	L2	CL2 - #8	0.100	0.000	100.0#	0	0.00
36	L2	CL2 - #9	0.100	0.000	100.0#	0	0.00
37	L2	CL2 - #10	0.100	0.000	100.0#	0	0.00
38	L2	DiCB - Total	0.100	1.083	-983.0#	1023	-0.12
39	L3	CL3 - #1	0.100	0.000	100.0#	0	0.00
40	L3	CL3 - #2	0.100	0.000	100.0#	0	0.00
41	L3	CL3 - #3	0.100	0.000	100.0#	0	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK265.D Vial: 9
Acq On : 23 Jun 2014 10:50 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #13 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	92	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	95	0.01
3	TCM	Total Monochlorobiphenyls	0.881	0.910	-3.3	87	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.605	3.0	88	0.00
5	SC	SURR1, gamma-BHC	0.138	0.131	5.1	88	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.419	-2.4	94	0.00
7	TCM	Total Tetrachlorobiphenyls	0.265	0.254	4.2	84	0.00
8	TC	RT #104 (CL5)	0.190	0.170	10.5	89	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.200	-0.5	94	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.183	-2.2	94	0.00
11	TC	RT #77 (CL4)	0.485	0.498	-2.7	95	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.160	-3.9	93	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.160	44.6#↓	59#	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.095	-2.2	96	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.067	-8.1	96	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.044	-10.0	96	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062314\DK265.D Vial: 9
Acq On : 23 Jun 2014 10:50 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #13 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	92	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	95	0.01
3	TCM	Total Monochlorobiphenyls	0.100	0.103	-3.0	87	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.097	3.0	88	0.00
5	SC	SURR1, gamma-BHC	0.200	0.190	5.0	88	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.103	-3.0	94	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.192	4.0	84	0.00
8	TC	RT #104 (CL5)	0.200	0.179	10.5	89	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.201	-0.5	94	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.205	-2.5	94	0.00
11	TC	RT #77 (CL4)	0.200	0.206	-3.0	95	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.312	-4.0	93	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.116	42.0#↓	59	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.308	-2.7	96	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.430	-7.5	96	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.554	-10.8	96	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 1121CO6247

Service Request: R1404414
Date Analyzed: 6/24/14 10:01

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062414\DK266.D\
Instrument ID: R-MS-52

Analytical Method: 680
Analysis Lot: 399144

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	39.82	190235	Pass
68	69	0.00	2	0.54	1307	Pass
69	198	0.00	100	50.37	240636	Pass
70	69	0.00	2	0.47	1131	Pass
127	198	40	60	52.23	249517	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	477717	Pass
199	198	5	9	7.34	35043	Pass
275	198	10	30	22.46	107312	Pass
365	198	1	100	3.15	15066	Pass
441	443	0.01	100	85.13	61208	Pass
442	198	40	100	76.94	367552	Pass
443	442	17	23	19.56	71901	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1407295-02	I:\ACQUDATA\5973B\DATA\062414\DK267.D\	6/24/14 10:14	
MRC-SW5A2-060914	R1404414-004	I:\ACQUDATA\5973B\DATA\062414\DK268.D\	6/24/14 10:48	
MRC-SW5B-060914	R1404414-005	I:\ACQUDATA\5973B\DATA\062414\DK269.D\	6/24/14 11:17	
MRC-SW6A-060914	R1404414-006	I:\ACQUDATA\5973B\DATA\062414\DK272.D\	6/24/14 12:44	
MRC-SW7A-060914	R1404414-008	I:\ACQUDATA\5973B\DATA\062414\DK273.D\	6/24/14 13:14	
MRC-SW7B-060914	R1404414-009	I:\ACQUDATA\5973B\DATA\062414\DK276.D\	6/24/14 14:42	
MRC-SW8A-060914	R1404414-010	I:\ACQUDATA\5973B\DATA\062414\DK277.D\	6/24/14 15:12	
Continuing Cal. VerificationCCVA	RQ1407295-03	I:\ACQUDATA\5973B\DATA\062414\DK287.D\	6/24/14 20:05	

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062414\DK267.D Vial: 1
Acq On : 24 Jun 2014 10:14 am Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	114	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	115	0.01
3	TCM	Total Monochlorobiphenyls	0.881	0.867	1.6	102	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.614	1.6	108	0.00
5	SC	SURR1, gamma-BHC	0.138	0.123	10.9	101	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.422	-3.2	115	-0.01
7	TCM	Total Tetrachlorobiphenyls	0.265	0.259	2.3	105	0.00
8	TC	RT #104 (CL5)	0.190	0.175	7.9	112	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.212	-6.5	121	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.190	-6.1	118	0.00
11	TC	RT #77 (CL4)	0.485	0.521	-7.4	121	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.167	-8.4	117	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.240	17.0	108	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.092	1.1	113	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.063	-1.6	110	0.02
16	TCM	Total Decachlorobiphenyl	0.040	0.039	2.5	105	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

00530

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062414\DK267.D Vial: 1
Acq On : 24 Jun 2014 10:14 am Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	114	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	115	0.01
3	TCM	Total Monochlorobiphenyls	0.100	0.098	2.0	102	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.098	2.0	108	0.00
5	SC	SURR1, gamma-BHC	0.200	0.179	10.5	101	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.103	-3.0	115	-0.01
7	TCM	Total Tetrachlorobiphenyls	0.200	0.195	2.5	105	0.00
8	TC	RT #104 (CL5)	0.200	0.185	7.5	112	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.213	-6.5	121	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.213	-6.5	118	0.00
11	TC	RT #77 (CL4)	0.200	0.215	-7.5	121	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.324	-8.0	117	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.161	19.5	108	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.299	0.3	113	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.404	-1.0	110	0.02
16	TCM	Total Decachlorobiphenyl	0.500	0.494	1.2	105	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

Data File : I:\ACQUDATA\5973B\DATA\062414\DK287.D Vial: 14
Acq On : 24 Jun 2014 8:05 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 L.R.

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	97	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	94	0.01
3	TCM	Total Monochlorobiphenyls	0.881	0.950	-7.8	91	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.670	-7.4	96	0.00
5	SC	SURR1, gamma-BHC	0.138	0.126	8.7	84	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.441	-7.8	98	0.00
7	TCM	Total Tetrachlorobiphenyls	0.265	0.269	-1.5	89	0.00
8	TC	RT #104 (CL5)	0.190	0.183	3.7	95	0.00
9	TCM	Total Pentachlorobiphenyls	0.199	0.207	-4.0	96	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.186	-3.9	94	0.00
11	TC	RT #77 (CL4)	0.485	0.518	-6.8	98	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.166	-7.8	95	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.116	59.9#	42#	0.02
14	TCM	Total Octachlorobiphenyls	0.093	0.092	1.1	92	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.062	0.0	89	0.01
16	TCM	Total Decachlorobiphenyl	0.040	0.041	-2.5	89	0.00
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#
42	L3	CL3 - #4	0.000	0.000	0.0	0#	-11.80#
43	L3	CL3 - #5	0.000	0.000	0.0	0#	-11.80#
44	L3	CL3 - #6	0.000	0.000	0.0	0#	-11.80#
45	L3	CL3 - #7	0.000	0.000	0.0	0#	-11.80#
46	L3	CL3 - #8	0.000	0.000	0.0	0#	-11.80#
47	L3	CL3 - #9	0.000	0.000	0.0	0#	-11.80#
48	L3	CL3 - #10	0.000	0.000	0.0	0#	-11.80#
49	L3	CL3 - #11	0.000	0.000	0.0	0#	-11.80#
50	L3	CL3 - #12	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

00534

Data File : I:\ACQUDATA\5973B\DATA\062414\DK287.D Vial: 14
Acq On : 24 Jun 2014 8:05 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #13 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	97	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	94	0.01
3	TCM	Total Monochlorobiphenyls	0.100	0.108	-8.0	91	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.107	-7.0	96	0.00
5	SC	SURR1, gamma-BHC	0.200	0.182	9.0	84	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.108	-8.0	98	0.00
7	TCM	Total Tetrachlorobiphenyls	0.200	0.203	-1.5	89	0.00
8	TC	RT #104 (CL5)	0.200	0.193	3.5	95	0.00
9	TCM	Total Pentachlorobiphenyls	0.200	0.208	-4.0	96	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.208	-4.0	94	0.00
11	TC	RT #77 (CL4)	0.200	0.214	-7.0	98	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.323	-7.7	95	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.091	54.5#↓	42	0.02
14	TCM	Total Octachlorobiphenyls	0.300	0.297	1.0	92	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.399	0.3	89	0.01
16	TCM	Total Decachlorobiphenyl	0.500	0.517	-3.4	89	0.00
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#
42	L3	CL3 - #4	0.100	0.000	100.0#	0	-11.80#
43	L3	CL3 - #5	0.100	0.000	100.0#	0	-11.80#
44	L3	CL3 - #6	0.100	0.000	100.0#	0	-11.80#
45	L3	CL3 - #7	0.100	0.000	100.0#	0	-11.80#
46	L3	CL3 - #8	0.100	0.000	100.0#	0	-11.80#
47	L3	CL3 - #9	0.100	0.000	100.0#	0	-11.80#
48	L3	CL3 - #10	0.100	0.000	100.0#	0	-11.80#
49	L3	CL3 - #11	0.100	0.000	100.0#	0	-11.80#
50	L3	CL3 - #12	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/25/14 14:34

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062514\DK291.D\
Instrument ID: R-MS-52

Analytical Method: 680
Analysis Lot: 399147

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	38.33	183975	Pass
68	69	0.00	2	1.82	4253	Pass
69	198	0.00	100	48.82	234317	Pass
70	69	0.00	2	0.55	1300	Pass
127	198	40	60	51.38	246621	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	479957	Pass
199	198	5	9	6.91	33179	Pass
275	198	10	30	22.28	106912	Pass
365	198	1	100	3.43	16459	Pass
441	443	0.01	100	81.84	57901	Pass
442	198	40	100	77.90	373867	Pass
443	442	17	23	18.92	70747	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1407298-02	I:\ACQUDATA\5973B\DATA\062514\DK292.D\	6/25/14 14:47	
MRC-SW8B-060914	R1404414-011	I:\ACQUDATA\5973B\DATA\062514\DK296.D\	6/25/14 15:50	
MRC-SW9B-060914	R1404414-013	I:\ACQUDATA\5973B\DATA\062514\DK297.D\	6/25/14 16:19	
MRC-SW9A-060914	R1404414-012	I:\ACQUDATA\5973B\DATA\062514\DK300.D\	6/25/14 17:47	
Continuing Cal. VerificationCCVA	RQ1407298-03	I:\ACQUDATA\5973B\DATA\062514\DK303.D\	6/25/14 19:15	

Data File : I:\ACQUDATA\5973B\DATA\062514\DK292.D Vial: 1
Acq On : 25 Jun 2014 2:47 pm Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 L.L.

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	110	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	116	0.00
3	TCM	Total Monochlorobiphenyls	0.881	0.842	4.4	99	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.625	-0.2	111	-0.02
5	SC	SURR1, gamma-BHC	0.138	0.147	-6.5	121	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.427	-4.4	117	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.265	0.270	-1.9	110	-0.02
8	TC	RT #104 (CL5)	0.190	0.173	8.9	112	-0.01
9	TCM	Total Pentachlorobiphenyls	0.199	0.212	-6.5	122	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.186	-3.9	116	-0.01
11	TC	RT #77 (CL4)	0.485	0.506	-4.3	118	-0.01
12	TCM	Total Heptachlorobiphenyls	0.154	0.164	-6.5	116	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.360	-24.6#	163	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.093	0.0	116	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.059	4.8	104	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.036	10.0	96	-0.01
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#
42	L3	CL3 - #4	0.000	0.000	0.0	0#	-11.80#
43	L3	CL3 - #5	0.000	0.000	0.0	0#	-11.80#
44	L3	CL3 - #6	0.000	0.000	0.0	0#	-11.80#
45	L3	CL3 - #7	0.000	0.000	0.0	0#	-11.80#
46	L3	CL3 - #8	0.000	0.000	0.0	0#	-11.80#
47	L3	CL3 - #9	0.000	0.000	0.0	0#	-11.80#
48	L3	CL3 - #10	0.000	0.000	0.0	0#	-11.80#
49	L3	CL3 - #11	0.000	0.000	0.0	0#	-11.80#
50	L3	CL3 - #12	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

00538

Data File : I:\ACQUDATA\5973B\DATA\062514\DK292.D Vial: 1
Acq On : 25 Jun 2014 2:47 pm Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM #1 L.L.
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	110	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	116	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.096	4.0	99	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.100	0.0	111	-0.02
5	SC	SURR1, gamma-BHC	0.200	0.213	-6.5	121	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.104	-4.0	117	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.200	0.204	-2.0	110	-0.02
8	TC	RT #104 (CL5)	0.200	0.183	8.5	112	-0.01
9	TCM	Total Pentachlorobiphenyls	0.200	0.213	-6.5	122	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.208	-4.0	116	-0.01
11	TC	RT #77 (CL4)	0.200	0.209	-4.5	118	-0.01
12	TCM	Total Heptachlorobiphenyls	0.300	0.318	-6.0	116	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.228	-14.0	163	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.303	-1.0	116	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.379	5.3	104	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.452	9.6	96	-0.01
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#
42	L3	CL3 - #4	0.100	0.000	100.0#	0	-11.80#
43	L3	CL3 - #5	0.100	0.000	100.0#	0	-11.80#
44	L3	CL3 - #6	0.100	0.000	100.0#	0	-11.80#
45	L3	CL3 - #7	0.100	0.000	100.0#	0	-11.80#
46	L3	CL3 - #8	0.100	0.000	100.0#	0	-11.80#
47	L3	CL3 - #9	0.100	0.000	100.0#	0	-11.80#
48	L3	CL3 - #10	0.100	0.000	100.0#	0	-11.80#
49	L3	CL3 - #11	0.100	0.000	100.0#	0	-11.80#
50	L3	CL3 - #12	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

JW

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062514\DK303.D Vial: 8
Acq On : 25 Jun 2014 7:15 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014 #13 L.R.
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	94	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	101	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.094	6.0	85	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.098	2.0	94	-0.02
5	SC	SURR1, gamma-BHC	0.200	0.194	3.0	96	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.106	-6.0	103	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.200	0.190	5.0	89	0.00
8	TC	RT #104 (CL5)	0.200	0.178	11.0	94	-0.01
9	TCM	Total Pentachlorobiphenyls	0.200	0.206	-3.0	102	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.205	-2.5	99	-0.01
11	TC	RT #77 (CL4)	0.200	0.203	-1.5	99	-0.01
12	TCM	Total Heptachlorobiphenyls	0.300	0.303	-1.0	96	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.184	8.0	111	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.291	3.0	96	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.426	-6.5	101	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.544	-8.8	101	-0.02
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

00544

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\062514\DK303.D Vial: 8
Acq On : 25 Jun 2014 7:15 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 L.R.

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	94	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	101	0.00
3	TCM	Total Monochlorobiphenyls	0.881	0.828	6.0	85	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.611	2.1	94	-0.02
5	SC	SURR1, gamma-BHC	0.138	0.134	2.9	96	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.435	-6.4	103	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.265	0.252	4.9	89	0.00
8	TC	RT #104 (CL5)	0.190	0.169	11.1	94	-0.01
9	TCM	Total Pentachlorobiphenyls	0.199	0.204	-2.5	102	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.183	-2.2	99	-0.01
11	TC	RT #77 (CL4)	0.485	0.491	-1.2	99	-0.01
12	TCM	Total Heptachlorobiphenyls	0.154	0.156	-1.3	96	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.282	2.4	111	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.090	3.2	96	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.066	-6.5	101	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.043	-7.5	101	-0.02
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

JW

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO **Service Request:** R1404414
Project: Middle River- Lockheed Martin Corp/Surface Water 1121CO6247 **Date Analyzed:** 7/1/14 09:08

Tune Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\070114\DK305.D\ **Analytical Method:** 680
Instrument ID: R-MS-52 **Analysis Lot:** 399987

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	40.52	194410	Pass
68	69	0.00	2	1.48	3498	Pass
69	198	0.00	100	49.25	236294	Pass
70	69	0.00	2	0.15	348	Pass
127	198	40	60	51.41	246613	Pass
197	198	0.00	1	0.00	0	Pass
198	198	100	100	100.00	479744	Pass
199	198	5	9	6.61	31728	Pass
275	198	10	30	21.70	104120	Pass
365	198	1	100	3.11	14934	Pass
441	443	0.01	100	88.21	57760	Pass
442	198	40	100	72.87	349611	Pass
443	442	17	23	18.73	65483	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1407579-02	I:\ACQUDATA\5973B\DATA\070114\DK306.D\	7/1/14 09:24	
Method Blank	RQ1407378-01	I:\ACQUDATA\5973B\DATA\070114\DK307.D\	7/1/14 09:55	
Lab Control Sample	RQ1407378-02	I:\ACQUDATA\5973B\DATA\070114\DK309.D\	7/1/14 10:53	
Duplicate Lab Control Sample	RQ1407378-03	I:\ACQUDATA\5973B\DATA\070114\DK310.D\	7/1/14 11:23	
MRC-SW8B-060914RE	R1404414-011	I:\ACQUDATA\5973B\DATA\070114\DK311.D\	7/1/14 11:52	
Continuing Cal. VerificationCCVA	RQ1407579-03	I:\ACQUDATA\5973B\DATA\070114\DK314.D\	7/1/14 13:21	

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\070114\DK306.D Vial: 1
Acq On : 1 Jul 2014 9:24 am Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 L-2

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	111	0.00
2	IR	d12-Chrysene	1.000	1.000	0.0	121	0.00
3	TCM	Total Monochlorobiphenyls	0.881	0.823	6.6	101	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.609	2.4	112	-0.02
5	SC	SURR1, gamma-BHC	0.138	0.136	1.4	117	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.407	0.5	116	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.265	0.251	5.3	107	-0.02
8	TC	RT #104 (CL5)	0.190	0.166	12.6	111	-0.01
9	TCM	Total Pentachlorobiphenyls	0.199	0.201	-1.0	120	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.182	-1.7	119	0.00
11	TC	RT #77 (CL4)	0.485	0.456	6.0	111	0.00
12	TCM	Total Heptachlorobiphenyls	0.154	0.153	0.6	113	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.344	-19.0	162	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.090	3.2	116	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.065	-4.8	120	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.040	0.0	112	-0.01
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\070114\DK306.D Vial: 1
Acq On : 1 Jul 2014 9:24 am Operator: J.Wu
Sample : CCV Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 L.R.

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	111	0.00
2	IR	d12-Chrysene	0.750	0.750	0.0	121	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.093	7.0	101	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.097	3.0	112	-0.02
5	SC	SURR1, gamma-BHC	0.200	0.198	1.0	117	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.100	0.0	116	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.200	0.190	5.0	107	-0.02
8	TC	RT #104 (CL5)	0.200	0.175	12.5	111	-0.01
9	TCM	Total Pentachlorobiphenyls	0.200	0.202	-1.0	120	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.204	-2.0	119	0.00
11	TC	RT #77 (CL4)	0.200	0.188	6.0	111	0.00
12	TCM	Total Heptachlorobiphenyls	0.300	0.298	0.7	113	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.219	-9.5	162	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.293	2.3	116	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.419	-4.7	120	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.505	-1.0	112	-0.01
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\070114\DK314.D Vial: 7
Acq On : 1 Jul 2014 1:21 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	1.000	1.000	0.0	118	-0.02
2	IR	d12-Chrysene	1.000	1.000	0.0	126	0.00
3	TCM	Total Monochlorobiphenyls	0.881	0.844	4.2	108	0.00
4	TCM	Total Dichlorobiphenyls	0.624	0.635	-1.8	123	-0.02
5	SC	SURR1, gamma-BHC	0.138	0.138	0.0	124	0.00
6	TCM	Total Trichlorobiphenyls	0.409	0.420	-2.7	125	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.265	0.249	6.0	110	-0.02
8	TC	RT #104 (CL5)	0.190	0.171	10.0	120	-0.01
9	TCM	Total Pentachlorobiphenyls	0.199	0.205	-3.0	128	0.00
10	TCM	Total Hexachlorobiphenyls	0.179	0.189	-5.6	129	-0.01
11	TC	RT #77 (CL4)	0.485	0.497	-2.5	126	-0.01
12	TCM	Total Heptachlorobiphenyls	0.154	0.166	-7.8	128	0.00
13	SC	SURR2, 4-4'-DDT	0.289	0.283	2.1	140	0.00
14	TCM	Total Octachlorobiphenyls	0.093	0.097	-4.3	131	0.00
15	TC	Total Nonachlorobiphenyls R	0.062	0.065	-4.8	126	0.00
16	TCM	Total Decachlorobiphenyl	0.040	0.043	-7.5	127	-0.02
17	L1	CL1 - #1	0.000	0.000	0.0	0#	-8.33#
18	L1	CL1 - #2	0.000	0.000	0.0	0#	-8.33#
19	L1	CL1 - #3	0.000	0.000	0.0	0#	-8.33#
20	L1	CL1 - #4	0.000	0.000	0.0	0#	-8.33#
21	L1	CL1 - #5	0.000	0.000	0.0	0#	-8.33#
22	L1	CL1 - #6	0.000	0.000	0.0	0#	-8.33#
23	L1	CL1 - #7	0.000	0.000	0.0	0#	-8.33#
24	L1	CL1 - #8	0.000	0.000	0.0	0#	-8.33#
25	L1	CL1 - #9	0.000	0.000	0.0	0#	-8.33#
26	L1	CL1 - #10	0.000	0.000	0.0	0#	-8.33#
27	L1	MonoCB - Total	0.881	0.000	100.0#	0#	-8.33#
28	L2	CL2 - #1	0.000	0.000	0.0	0#	-10.39#
29	L2	CL2 - #2	0.000	0.000	0.0	0#	-10.39#
30	L2	CL2 - #3	0.000	0.000	0.0	0#	-10.39#
31	L2	CL2 - #4	0.000	0.000	0.0	0#	-10.39#
32	L2	CL2 - #5	0.000	0.000	0.0	0#	-10.39#
33	L2	CL2 - #6	0.000	0.000	0.0	0#	-10.39#
34	L2	CL2 - #7	0.000	0.000	0.0	0#	-10.39#
35	L2	CL2 - #8	0.000	0.000	0.0	0#	-10.39#
36	L2	CL2 - #9	0.000	0.000	0.0	0#	-10.39#
37	L2	CL2 - #10	0.000	0.000	0.0	0#	-10.39#
38	L2	DiCB - Total	0.624	0.000	100.0#	0#	-10.39#
39	L3	CL3 - #1	0.000	0.000	0.0	0#	-11.80#
40	L3	CL3 - #2	0.000	0.000	0.0	0#	-11.80#
41	L3	CL3 - #3	0.000	0.000	0.0	0#	-11.80#

(#) = Out of Range

00560

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973B\DATA\070114\DK314.D Vial: 7
Acq On : 1 Jul 2014 1:21 pm Operator: J.Wu
Sample : FINAL CHECK Inst : 5973-B
Misc : CAL. 1.0 STD 680.PCB Multiplr: 1.00
MS Integration Params: INTIS.P

Method : I:\ACQUDATA\5973B\METHODS\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Multiple Level Calibration

#13 K.R.

Min. RRF : 0.000 Min. Rel. Area : 70% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d10-Phenanthrene	0.750	0.750	0.0	118	-0.02
2	IR	d12-Chrysene	0.750	0.750	0.0	126	0.00
3	TCM	Total Monochlorobiphenyls	0.100	0.096	4.0	108	0.00
4	TCM	Total Dichlorobiphenyls	0.100	0.102	-2.0	123	-0.02
5	SC	SURR1, gamma-BHC	0.200	0.201	-0.5	124	0.00
6	TCM	Total Trichlorobiphenyls	0.100	0.103	-3.0	125	-0.02
7	TCM	Total Tetrachlorobiphenyls	0.200	0.188	6.0	110	-0.02
8	TC	RT #104 (CL5)	0.200	0.180	10.0	120	-0.01
9	TCM	Total Pentachlorobiphenyls	0.200	0.206	-3.0	128	0.00
10	TCM	Total Hexachlorobiphenyls	0.200	0.212	-6.0	129	-0.01
11	TC	RT #77 (CL4)	0.200	0.205	-2.5	126	-0.01
12	TCM	Total Heptachlorobiphenyls	0.300	0.324	-8.0	128	0.00
13	SC	SURR2, 4-4'-DDT	0.200	0.185	7.5	140	0.00
14	TCM	Total Octachlorobiphenyls	0.300	0.315	-5.0	131	0.00
15	TC	Total Nonachlorobiphenyls R	0.400	0.421	-5.2	126	0.00
16	TCM	Total Decachlorobiphenyl	0.500	0.548	-9.6	127	-0.02
17	L1	CL1 - #1	0.100	0.000	100.0#	0	-8.33#
18	L1	CL1 - #2	0.100	0.000	100.0#	0	-8.33#
19	L1	CL1 - #3	0.100	0.000	100.0#	0	-8.33#
20	L1	CL1 - #4	0.100	0.000	100.0#	0	-8.33#
21	L1	CL1 - #5	0.100	0.000	100.0#	0	-8.33#
22	L1	CL1 - #6	0.100	0.000	100.0#	0	-8.33#
23	L1	CL1 - #7	0.100	0.000	100.0#	0	-8.33#
24	L1	CL1 - #8	0.100	0.000	100.0#	0	-8.33#
25	L1	CL1 - #9	0.100	0.000	100.0#	0	-8.33#
26	L1	CL1 - #10	0.100	0.000	100.0#	0	-8.33#
27	L1	MonoCB - Total	0.100	0.000	100.0#	0	-8.33#
28	L2	CL2 - #1	0.100	0.000	100.0#	0	-10.39#
29	L2	CL2 - #2	0.100	0.000	100.0#	0	-10.39#
30	L2	CL2 - #3	0.100	0.000	100.0#	0	-10.39#
31	L2	CL2 - #4	0.100	0.000	100.0#	0	-10.39#
32	L2	CL2 - #5	0.100	0.000	100.0#	0	-10.39#
33	L2	CL2 - #6	0.100	0.000	100.0#	0	-10.39#
34	L2	CL2 - #7	0.100	0.000	100.0#	0	-10.39#
35	L2	CL2 - #8	0.100	0.000	100.0#	0	-10.39#
36	L2	CL2 - #9	0.100	0.000	100.0#	0	-10.39#
37	L2	CL2 - #10	0.100	0.000	100.0#	0	-10.39#
38	L2	DiCB - Total	0.100	0.000	100.0#	0	-10.39#
39	L3	CL3 - #1	0.100	0.000	100.0#	0	-11.80#
40	L3	CL3 - #2	0.100	0.000	100.0#	0	-11.80#
41	L3	CL3 - #3	0.100	0.000	100.0#	0	-11.80#

(#) = Out of Range

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Analyzed:**	6/23/14 18:27
Sample Matrix:	Water	**Date Extracted:**	6/13/14

Method Blank Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Sample Name:	Method Blank	**Instrument ID:**	R-MS-52
Lab Code:	RQ1406528-01	**File ID:**	I:\ACQUDATA\5973B\DATA\062314\DK256.D\
Analytical Method:	680		
Prep Method:	EPA 3510C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1406528-02	I:\ACQUDATA\5973B\DATA\062314\DK257.D\	6/23/14 18:57
Duplicate Lab Control Sample	RQ1406528-03	I:\ACQUDATA\5973B\DATA\062314\DK258.D\	6/23/14 19:26
MRC-SW5A1-060914	R1404414-003	I:\ACQUDATA\5973B\DATA\062314\DK259.D\	6/23/14 19:55
MRC-SW6B-060914	R1404414-007	I:\ACQUDATA\5973B\DATA\062314\DK261.D\	6/23/14 20:54
MRC-SW5A2-060914	R1404414-004	I:\ACQUDATA\5973B\DATA\062414\DK268.D\	6/24/14 10:48
MRC-SW5B-060914	R1404414-005	I:\ACQUDATA\5973B\DATA\062414\DK269.D\	6/24/14 11:17
MRC-SW6A-060914	R1404414-006	I:\ACQUDATA\5973B\DATA\062414\DK272.D\	6/24/14 12:44
MRC-SW7A-060914	R1404414-008	I:\ACQUDATA\5973B\DATA\062414\DK273.D\	6/24/14 13:14
MRC-SW7B-060914	R1404414-009	I:\ACQUDATA\5973B\DATA\062414\DK276.D\	6/24/14 14:42
MRC-SW8A-060914	R1404414-010	I:\ACQUDATA\5973B\DATA\062414\DK277.D\	6/24/14 15:12
MRC-SW8B-060914	R1404414-011	I:\ACQUDATA\5973B\DATA\062514\DK296.D\	6/25/14 15:50
MRC-SW9B-060914	R1404414-013	I:\ACQUDATA\5973B\DATA\062514\DK297.D\	6/25/14 16:19
MRC-SW9A-060914	R1404414-012	I:\ACQUDATA\5973B\DATA\062514\DK300.D\	6/25/14 17:47

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/13/14
		Date Analyzed:	6/23/14 18:27
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1406528-01	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	398720
Prep Method:	EPA 3510C	**Extraction Lot:**	210751
Data File Name:	I:\ACQUDATA\5973B\DATA\062314\DK256.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0050	U	0.0050	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0050	U	0.0050	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0050	U	0.0050	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.010	U	0.010	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.010	U	0.010	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.015	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.015	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.020	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.025	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	90	63-119	6/23/14 18:27	
4,4'-DDT	108	62-181	6/23/14 18:27	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/23/14

Lab Control Sample Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method: 680
Prep Method: EPA 3510C

Units: µg/L
Basis: NA

Extraction Lot: 210751

	Lab Control Sample RQ1406528-02			Duplicate Lab Control Sample RQ1406528-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Monochlorobiphenyls, Total	0.170	0.250	68	0.180	0.250	72	34 - 137	6	30
Dichlorobiphenyls, Total	0.185	0.250	74	0.185	0.250	74	37 - 139	<1	30
Trichlorobiphenyls, Total	0.190	0.250	76	0.190	0.250	76	10 - 173	<1	30
Tetrachlorobiphenyls, Total	0.355	0.500	71	0.350	0.500	70	14 - 153	1	30
Pentachlorobiphenyls, Total	0.420	0.500	84	0.420	0.500	84	10 - 180	<1	30
Hexachlorobiphenyls, Total	0.405	0.500	81	0.420	0.500	84	11 - 160	4	30
Heptachlorobiphenyls, Total	0.615	0.750	82	0.590	0.750	79	53 - 120	4	30
Octachlorobiphenyls, Total	0.605	0.750	81	0.580	0.750	77	57 - 125	4	30
Decachlorobiphenyls, Total	1.12	1.25	90	0.925	1.25	74	29 - 162	19	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Analyzed:**	7/1/14 09:55
Sample Matrix:	Water	**Date Extracted:**	6/30/14

Method Blank Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Sample Name:	Method Blank	**Instrument ID:**	R-MS-52
Lab Code:	RQ1407378-01	**File ID:**	I:\ACQUDATA\5973B\DATA\070114\DK307.D\
Analytical Method:	680		
Prep Method:	EPA 3510C		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1407378-02	I:\ACQUDATA\5973B\DATA\070114\DK309.D\	7/1/14 10:53
Duplicate Lab Control Sample	RQ1407378-03	I:\ACQUDATA\5973B\DATA\070114\DK310.D\	7/1/14 11:23
MRC-SW8B-060914RE	R1404414-011	I:\ACQUDATA\5973B\DATA\070114\DK311.D\	7/1/14 11:52

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/30/14
		Date Analyzed:	7/1/14 09:55
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1407378-01	**Basis:**	NA

Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method:	680	**Analysis Lot:**	399987
Prep Method:	EPA 3510C	**Extraction Lot:**	211949
Data File Name:	I:\ACQUDATA\5973B\DATA\070114\DK307.D\	**Instrument Name:**	R-MS-52
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
27323-18-8	Monochlorobiphenyls, Total	0.0050	U	0.0050	0.0017	
25512-42-9	Dichlorobiphenyls, Total	0.0050	U	0.0050	0.0044	
25323-68-6	Trichlorobiphenyls, Total	0.0050	U	0.0050	0.0034	
26914-33-0	Tetrachlorobiphenyls, Total	0.010	U	0.010	0.0054	
25429-29-2	Pentachlorobiphenyls, Total	0.010	U	0.010	0.0088	
26601-64-9	Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	
28655-71-2	Heptachlorobiphenyls, Total	0.015	U	0.015	0.011	
55722-26-4	Octachlorobiphenyls, Total	0.015	U	0.015	0.0084	
53742-07-7	Nonachlorobiphenyls, Total	0.020	U	0.020	0.019	
2051-24-3	Decachlorobiphenyls, Total	0.025	U	0.025	0.018	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
gamma-BHC (Lindane)	127 *	63-119	7/1/14 09:55	
4,4'-DDT	107	62-181	7/1/14 09:55	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 7/ 1/14

Lab Control Sample Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

Analytical Method: 680
Prep Method: EPA 3510C

Units: µg/L
Basis: NA

Extraction Lot: 211949

Analyte Name	Lab Control Sample RQ1407378-02 Result	Spike Amount	% Rec	Duplicate Lab Control Sample RQ1407378-03 Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Monochlorobiphenyls, Total	0.165	0.250	66	0.170	0.250	68	34 - 137	3	30
Dichlorobiphenyls, Total	0.180	0.250	72	0.175	0.250	70	37 - 139	3	30
Trichlorobiphenyls, Total	0.180	0.250	72	0.185	0.250	74	10 - 173	3	30
Tetrachlorobiphenyls, Total	0.320	0.500	64	0.335	0.500	67	14 - 153	5	30
Pentachlorobiphenyls, Total	0.415	0.500	83	0.430	0.500	86	10 - 180	4	30
Hexachlorobiphenyls, Total	0.410	0.500	82	0.410	0.500	82	11 - 160	<1	30
Heptachlorobiphenyls, Total	0.600	0.750	80	0.620	0.750	83	53 - 120	3	30
Octachlorobiphenyls, Total	0.625	0.750	83	0.615	0.750	82	57 - 125	2	30
Decachlorobiphenyls, Total	1.07	1.25	86	1.08	1.25	86	29 - 162	<1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/23/14 17:58

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062314\DK255.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1407158-10
Analysis Lot: 398720
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	240,014	11.21	204,393	16.94
	Upper Limit ==>	360,021	11.71	306,590	17.44
	Lower Limit ==>	168,010	10.71	143,075	16.44
	ICAL Result ==>	241,097	11.22	206,686	16.92
Associated Analyses					
Method Blank	RQ1406528-01	212,710	11.21	194,805	16.92
Lab Control Sample	RQ1406528-02	210,146	11.22	194,062	16.92
Duplicate Lab Control Sample	RQ1406528-03	210,460	11.21	189,545	16.92
MRC-SW5A1-060914	R1404414-003	207,045	11.21	198,214	16.92
MRC-SW6B-060914	R1404414-007	200,151	11.21	187,418	16.92
Continuing Cal. Verification	RQ1407158-11	220,775	11.22	195,646	16.94

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/24/14 10:14

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062414\DK267.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1407295-02
Analysis Lot: 399144
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	275,311	11.22	238,207	16.94
	Upper Limit ==>	412,967	11.72	357,311	17.44
	Lower Limit ==>	192,718	10.72	166,745	16.44
	ICAL Result ==>	241,097	11.22	206,686	16.92
Associated Analyses					
MRC-SW5A2-060914	R1404414-004	223,946	11.22	203,035	16.92
MRC-SW5B-060914	R1404414-005	238,121	11.21	208,093	16.92
MRC-SW6A-060914	R1404414-006	238,460	11.21	218,271	16.92
MRC-SW7A-060914	R1404414-008	222,559	11.22	192,755	16.94
MRC-SW7B-060914	R1404414-009	219,517	11.21	193,027	16.92
MRC-SW8A-060914	R1404414-010	236,786	11.21	215,998	16.94
Continuing Cal. Verification	RQ1407295-03	234,647	11.21	193,866	16.94

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/25/14 14:47

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\062514\DK292.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1407298-02
Analysis Lot: 399147
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	264,763	11.21	239,878	16.92
	Upper Limit ==>	397,145	11.71	359,817	17.42
	Lower Limit ==>	185,334	10.71	167,915	16.42
	ICAL Result ==>	241,097	11.22	206,686	16.92
Associated Analyses					
MRC-SW8B-060914	R1404414-011	215,228	11.20	192,392	16.92
MRC-SW9B-060914	R1404414-013	204,028	11.20	199,031	16.92
MRC-SW9A-060914	R1404414-012	218,179	11.20	210,786	16.92
Continuing Cal. Verification	RQ1407298-03	227,118	11.21	207,777	16.92

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 7/1/14 09:24

Internal Standard Area and RT Summary
Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry

File ID: I:\ACQUDATA\5973B\DATA\070114\DK306.D\
Instrument ID: R-MS-52
Analytical Method: 680

Lab Code: RQ1407579-02
Analysis Lot: 399987
Signal ID:

		Phenanthrene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	268,558	11.21	249,349	16.92
	Upper Limit ==>	402,837	11.71	374,024	17.42
	Lower Limit ==>	187,991	10.71	174,544	16.42
	ICAL Result ==>	241,097	11.22	206,686	16.92
Associated Analyses					
Method Blank	RQ1407378-01	201,420	11.21	185,001	16.92
Lab Control Sample	RQ1407378-02	219,694	11.21	203,369	16.92
Duplicate Lab Control Sample	RQ1407378-03	203,799	11.20	188,931	16.92
MRC-SW8B-060914	R1404414-011	233,508	11.20	230,264	16.92
Continuing Cal. Verification	RQ1407579-03	283,687	11.20	261,023	16.92

Results flagged with an asterisk (*) indicate values outside control criteria.

Preparation Information Benchsheet

Prep Run#: 210751
Team: Semivoa GCMS/DMURPHY

Prep WorkFlow: OrgExtAq(7)
Prep Method: EPA 3510C

Status: Prepped
Prep Date/Time: 6/13/14 06:57 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1406528-01	MB		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/68689	
2	RQ1406528-02	LCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/68669; 0.5000 mL/68689	
3	RQ1406528-03	DLCS		1000mL	680/Pest PCB	6			0.50mL	clear-colorless	0.5000 mL/68689; 0.5000 mL/68669	
4	R1404414-003	MRC-SW5A1-060914	.06	1020mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	(V. 6/14/14 SF.
5	R1404414-004	MRC-SW5A2-060914	.05	820mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
6	R1404414-005	MRC-SW5B-060914	.06	1040mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
7	R1404414-006	MRC-SW6A-060914	.05	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
8	R1404414-007	MRC-SW6B-060914	.06	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	SF.
9	R1404414-008	MRC-SW7A-060914	.05	1000mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
10	R1404414-009	MRC-SW7B-060914	.06	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
11	R1404414-010	MRC-SW8A-060914	.05	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
12	R1404414-011	MRC-SW8B-060914	.06	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
13	R1404414-012	MRC-SW9A-060914	.05	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	
14	R1404414-013	MRC-SW9B-060914	.05	1060mL	680/Pest PCB	7			0.50mL	yellow-cloudy	0.5000 mL/68689	

Spiking Solutions

Name: 680 Matrix Spike 0.5-2.0 ug/mL Inventory ID 68669 Logbook Ref: Expires On: 09/20/2014

Name: 680 PCB Surrogate 1 ug/mL Inventory ID 68689 Logbook Ref: Expires On: 09/20/2014

Preparation Materials

Eppendorf Pipette Repeater EXT #14 (61350) 2mL Graduated Vials (71402) Dichloromethane (Methylene Chloride) 99.9% MeCl2 canister (71374)

Prepared Sodium Sulfate Na2SO4 (70845)

Preparation Steps

Step:	Extraction	Step:	Concentration	Step:	Final Volume
Started:	6/13/14 06:57	Started:	6/13/14 17:05	Started:	6/13/14 20:21
Finished:	6/13/14 14:49	Finished:	6/13/14 18:15	Finished:	6/13/14 20:21
By:	DMURPHY	By:	SGOLBERG	By:	SGOLBERG
Comments		Comments		Comments	

Comments:

SAMPLE ID MRC-SW5A1-060914

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST	IS AMOUNT (NG)	Final Extract Volume (UL)	AVE RRF	CONCENTRATION PPB
207045	1	1585	0.75	500	0.2650	0.011
			Amt. inj	Sample Volume (ML)		
			1	1020		

Tetrachlorobiphenyl = 0.235 ug/L

Quantitation Report (QT Reviewed)

Data File : I:\ACQUDATA\5973B\DATA\062314\DK259.D Vial: 6
Acq On : 23 Jun 2014 7:55 pm Operator: J.Wu
Sample : R1404414-003|1.0 MRC-SW5A1-060914 Inst : 5973-B
Misc : 06/13/2014 1.0 TetraTech 680.pcb Multiplr: 1.00
MS Integration Params: INTIS.P
Quant Time: Jun 24 14:37 2014 Quant Results File: 6800623B.RES

Quant Method : I:\ACQUDATA\5...\6800623B.M (RTE Integrator)
Title : 680.PCB by SIM
Last Update : Tue Jun 24 11:41:24 2014
Response via : Initial Calibration
DataAcq Meth : 680

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) d10-Phenanthrene	11.21	188	207045	0.75	ppm	0.00
2) d12-Chrysene	16.92	240	198214	0.75	ppm	0.00
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.97	219	29602	0.81	ppm	0.00
Spiked Amount 1.000	Range 63 - 119		Recovery = 81.00%			
13) SURR2, 4-4'-DDT	16.07	235	58345	0.64	ppm	0.00
Spiked Amount 1.000	Range 62 - 181		Recovery = 64.00%			
Target Compounds						Qvalue
68) TetraCB - Total	12.06	292	1585m	0.023	ppm	
100) HexaCB - Total	14.86	360	200m	0.004	ppm	#

(#) = qualifier out of range (m) = manual integration
DK259.D 6800623B.M Tue Jun 24 14:43:01 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp 112ICO6247

Service Request: R1404414
Date Analyzed: 5/2/14 09:52

Tune Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

File ID: I:\ACQUDATA\5975E\data\050214\Af625.D\
Instrument ID: R-MS-56

Analytical Method: 522
Analysis Lot: 393191

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
173	174	0	2	0.00	0	Pass
174	95	50	120	74.76	45403	Pass
175	174	5	9	7.72	3505	Pass
176	174	95	101	95.51	43363	Pass
177	176	5	9	6.47	2805	Pass
50	95	15	40	16.50	10021	Pass
75	95	30	60	45.23	27469	Pass
95	95	100	100	100.00	60728	Pass
96	95	5	9	6.97	4230	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Initial Calibration	RQ1405292-02	I:\ACQUDATA\5975E\data\050214\Af629.D\	5/2/14 11:21	
Initial Calibration	RQ1405292-03	I:\ACQUDATA\5975E\data\050214\Af630.D\	5/2/14 11:39	
Initial Calibration	RQ1405292-04	I:\ACQUDATA\5975E\data\050214\Af631.D\	5/2/14 11:58	
Initial Calibration	RQ1405292-05	I:\ACQUDATA\5975E\data\050214\Af632.D\	5/2/14 12:17	
Initial Calibration	RQ1405292-06	I:\ACQUDATA\5975E\data\050214\Af633.D\	5/2/14 12:36	
Initial Calibration	RQ1405292-07	I:\ACQUDATA\5975E\data\050214\Af634.D\	5/2/14 12:55	
Initial Calibration	RQ1405292-08	I:\ACQUDATA\5975E\data\050214\Af635.D\	5/2/14 13:14	
Initial Calibration	RQ1405292-09	I:\ACQUDATA\5975E\data\050214\Af636.D\	5/2/14 13:42	

Method Path : I:\ACQUDATA\5975E\METHODS\
Method File : SDIOX050214.M
Title : 8270 BNA ANALYSIS
Last Update : Mon May 05 07:43:33 2014
Response Via : Initial Calibration

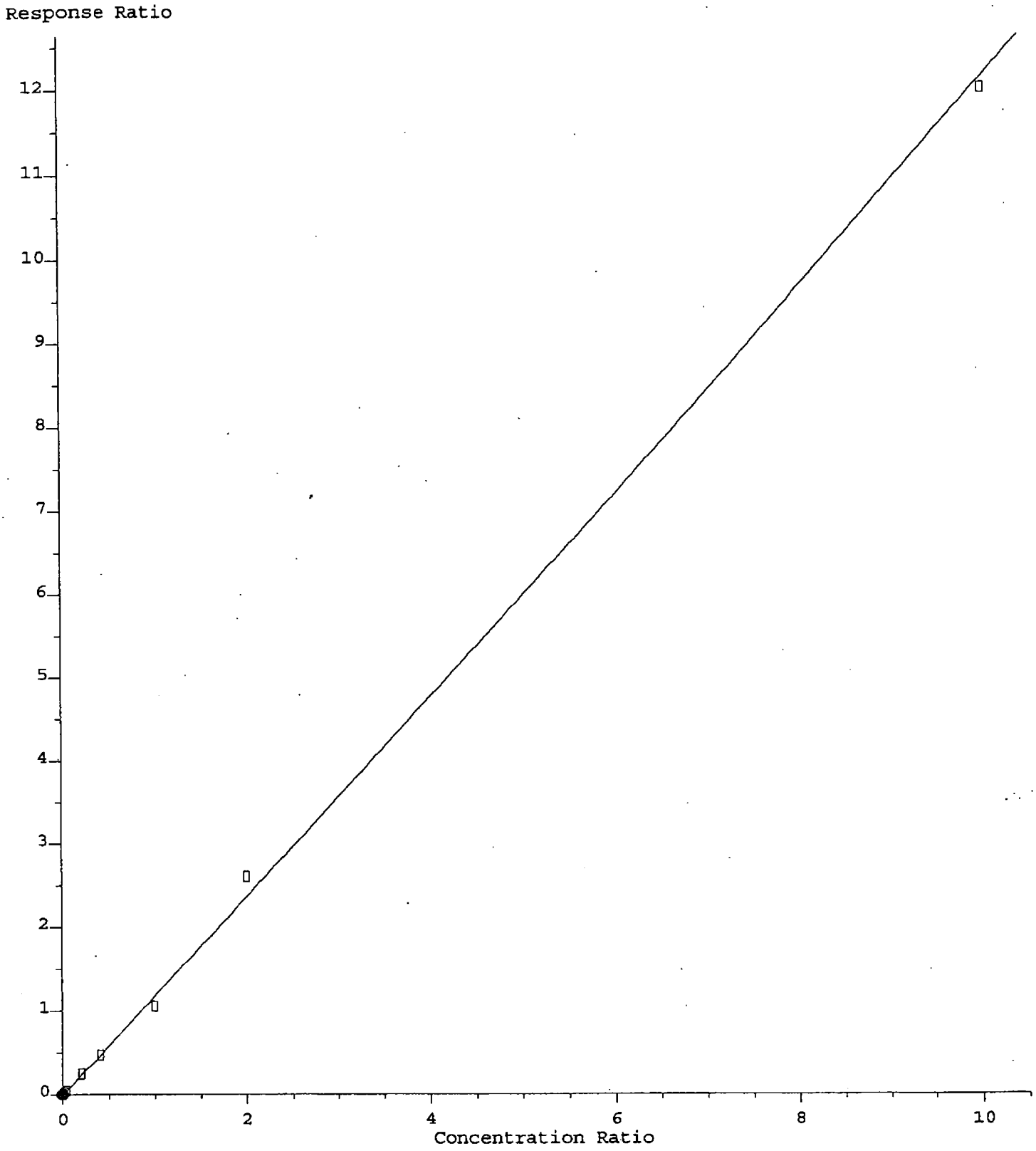
Calibration Files
2 =Af629.D 10 =Af630.D 20 =Af631.D 100 =Af632.D 200 =Af633.D 500 =Af634.D 1000=Af635.D 5000=Af636.D

	Compound	2	10	20	100	200	500	1000	5000	Avg	%RSD
1)	IR d8-THF	ISTD									
2)	T 1,4-Dioxane	1.161	1.195	1.093	1.239	1.188	1.055	1.305	1.204	1.180	6.67
3)	S SURR,1,4-DIOXA...	1.161	1.031	0.922	1.071	1.019	0.906	1.103	1.007	1.027	8.37

(#) = Out of Range

00620

1,4-Dioxane



R = 4.13e-003 A*A + 1.18e+000 A - 6.78e-005
Coef of Det (r^2) = 0.995 Curve Fit: Quadratic w(1/a^2)
Method Name: I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Calibration Table Last Updated: Mon May 05 07:43:33 2014

00623

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 1121CO6247

Service Request: R1404414
Date Analyzed: 6/13/14 10:49

Tune Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

File ID: I:\ACQUDATA\5975E\data\061314\Af938.D\
Instrument ID: R-MS-56

Analytical Method: 522
Analysis Lot: 397133

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
173	174	0	2	0.00	0	Pass
174	95	50	120	76.98	34568	Pass
175	174	5	9	7.89	2726	Pass
176	174	95	101	98.87	34176	Pass
177	176	5	9	7.37	2520	Pass
50	95	15	40	15.17	6810	Pass
75	95	30	60	43.74	19640	Pass
95	95	100	100	100.00	44904	Pass
96	95	5	9	6.45	2895	Pass

Sample Name	Lab Code	File ID	Date Analyzed	Q
Continuing Calibration Verification	RQ1406578-02	I:\ACQUDATA\5975E\data\061314\Af939.D\	6/13/14 11:22	
Method Blank	RQ1406525-01	I:\ACQUDATA\5975E\data\061314\Af940.D\	6/13/14 11:55	
Lab Control Sample	RQ1406525-02	I:\ACQUDATA\5975E\data\061314\Af941.D\	6/13/14 12:13	
Duplicate Lab Control Sample	RQ1406525-03	I:\ACQUDATA\5975E\data\061314\Af942.D\	6/13/14 12:32	
Lab Control Sample	RQ1406525-04	I:\ACQUDATA\5975E\data\061314\Af943.D\	6/13/14 12:50	
MRC-SW1A-060914	R1404414-001	I:\ACQUDATA\5975E\data\061314\Af949.D\	6/13/14 14:39	
Continuing Calibration Verification	RQ1406578-03	I:\ACQUDATA\5975E\data\061314\Af950.D\	6/13/14 14:58	
MRC-SW2A-060914	R1404414-002	I:\ACQUDATA\5975E\data\061314\Af951.D\	6/13/14 15:16	
Continuing Cal. VerificationCCVA	RQ1406578-04	I:\ACQUDATA\5975E\data\061314\Af960.D\	6/13/14 18:04	
Continuing Calibration Verification	RQ1406578-05	I:\ACQUDATA\5975E\data\061314\Af961.D\	6/13/14 19:55	
Continuing Cal. VerificationCCVA	RQ1406578-06	I:\ACQUDATA\5975E\data\061314\Af967.D\	6/13/14 21:13	

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5975E\data\050214\
Data File : Af637.D
Acq On : 2 May 2014 2:01 pm
Operator : m.pedro
Sample : icv
Misc : initial cal
ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 05 07:44:00 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d8-THF	500.000	500.000	0.0	98	-0.02
2	T	1,4-Dioxane	200.000	171.335	14.3	83	0.00
3	S	SURR,1,4-DIOXANE-d8	200.000	188.714	5.6	91	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

00651

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af939.D
Acq On : 13 Jun 2014 11:22 am
Operator : m.pedro
Sample : ccv
Misc : ccv .002ppm
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 13 11:47:03 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d8-THF	500.000	500.000	0.0	86	-0.01
2	T	1,4-Dioxane	2.000	1.980	1.0	84	0.04
3	S	SURR,1,4-DIOXANE-d8	2.000	1.831	8.5	79	0.04

(#) = Out of Range SPCC's out = 0 CCC's out = 0

6/13

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af950.D
Acq On : 13 Jun 2014 2:58 pm
Operator : m.pedro
Sample : ccv.2ppm
Misc : ccv .2ppm
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jun 13 19:26:26 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 IR	d8-THF	500.000	500.000	0.0	77	-0.02
2 T	1,4-Dioxane	200.000	226.207	-13.1	86	-0.01
3 S	SURR,1,4-DIOXANE-d8	200.000	226.922	-13.5	85	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

LP 6/13

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af960.D
Acq On : 13 Jun 2014 6:04 pm
Operator : m.pedro
Sample : ccv 1.0ppm
Misc : ccv 1.0ppm
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jun 13 19:26:48 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 IR	d8-THF	500.000	500.000	0.0	76	-0.02
2 T	1,4-Dioxane	1000.000	1216.778	-21.7#	84	-0.03
3 S	SURR,1,4-DIOXANE-d8	1000.000	1224.027	-22.4#	84	-0.02

MP 6/13

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af961.D
Acq On : 13 Jun 2014 7:55 pm
Operator : m.pedro
Sample : ccv
Misc : ccv .002ppm
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 13 20:07:33 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d8-THF	500.000	500.000	0.0	84	-0.01
2	T	1,4-Dioxane	2.000	2.078	-3.9	88	0.02
3	S	SURR,1,4-DIOXANE-d8	2.000	2.112	-5.6	88	0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0

MB 6/13

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af967.D
Acq On : 13 Jun 2014 9:13 pm
Operator : m.pedro
Sample : ccv.2ppm
Misc : ccv .2ppm
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jun 13 21:19:46 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IR	d8-THF	500.000	500.000	0.0	78	0.00
2	T	1,4-Dioxane	200.000	222.472	-11.2	86	0.00
3	S	SURR,1,4-DIOXANE-d8	200.000	221.824	-10.9	85	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

6/13

00679

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 1121CO6247	**Date Analyzed:**	6/13/14 11:55
Sample Matrix:	Water	**Date Extracted:**	6/13/14

Method Blank Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Sample Name:	Method Blank	**Instrument ID:**	R-MS-56
Lab Code:	RQ1406525-01	**File ID:**	I:\ACQUDATA\5975E\data\061314\Af940.D\
Analytical Method:	522		
Prep Method:	Method		

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1406525-02	I:\ACQUDATA\5975E\data\061314\Af941.D\	6/13/14 12:13
Duplicate Lab Control Sample	RQ1406525-03	I:\ACQUDATA\5975E\data\061314\Af942.D\	6/13/14 12:32
Lab Control Sample	RQ1406525-04	I:\ACQUDATA\5975E\data\061314\Af943.D\	6/13/14 12:50
MRC-SW1A-060914	R1404414-001	I:\ACQUDATA\5975E\data\061314\Af949.D\	6/13/14 14:39
MRC-SW2A-060914	R1404414-002	I:\ACQUDATA\5975E\data\061314\Af951.D\	6/13/14 15:16

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Tetra Tech GEO	**Service Request:**	R1404414
Project:	Middle River- Lockheed Martin Corp/Surface Water 112ICO6247	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/13/14
		Date Analyzed:	6/13/14 11:55
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1406525-01	**Basis:**	As Received

1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Analytical Method:	522	**Analysis Lot:**	397133
Prep Method:	Method	**Extraction Lot:**	210544
Data File Name:	I:\ACQUDATA\5975E\data\061314\Af940.D\	**Instrument Name:**	R-MS-56
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
123-91-1	1,4-Dioxane	0.200	U	0.200	0.0200	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	106	70-130	6/13/14 11:55	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/13/14

Lab Control Sample Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Analytical Method: 522
Prep Method: Method

Units: µg/L
Basis: As Received

Extraction Lot: 210544

	Lab Control Sample RQ1406525-02			Duplicate Lab Control Sample RQ1406525-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	10.2	10.1	101	10.6	10.1	105	70 - 130	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247
Sample Matrix: Water

Service Request: R1404414
Date Analyzed: 6/13/14

Lab Control Sample Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

Analytical Method: 522
Prep Method: Method

Units: µg/L
Basis: As Received

Extraction Lot: 210544

Analyte Name	Lab Control Sample RQ1406525-04 Result	Spike Amount	% Rec		% Rec Limits
1,4-Dioxane	0.0560	0.0405	138	*	70 - 130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: R1404414
Date Analyzed: 6/13/14 11:22

Internal Standard Area and RT Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

File ID: I:\ACQUDATA\5975E\data\061314\Af939.D\
Instrument ID: R-MS-56
Analytical Method: 522

Lab Code: RQ1406578-02
Analysis Lot: 397133
Signal ID:

		Tetrahydrofuran-d8	
		Area	**RT**
	Results ==>	48,604	2.82
	Upper Limit ==>	63,185	3.32
	Lower Limit ==>	34,023	2.32
	ICAL Result ==>	62,687	2.84
Associated Analyses			
Method Blank	RQ1406525-01	46,842	2.83
Lab Control Sample	RQ1406525-02	47,370	2.81
Duplicate Lab Control Sample	RQ1406525-03	46,925	2.83
Lab Control Sample	RQ1406525-04	48,858	2.83
MRC-SW1A-060914	R1404414-001	49,772	2.81

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Tetra Tech GEO
Project: Middle River- Lockheed Martin Corp/Surface Water 112ICO6247

Service Request: RI404414
Date Analyzed: 6/13/14 14:58

Internal Standard Area and RT Summary
1,4-Dioxane by Solid Phase Extraction and GC/MS With Selected Ion Monitoring

File ID: I:\ACQUDATA\5975E\data\061314\Af950.D\
Instrument ID: R-MS-56
Analytical Method: 522

Lab Code: RQ1406578-03
Analysis Lot: 397133
Signal ID:

		Tetrahydrofuran-d8	
		Area	**RT**
	Results ==>	48,023	2.81
	Upper Limit ==>	62,430	3.31
	Lower Limit ==>	33,616	2.31
	ICAL Result ==>	62,687	2.84
Associated Analyses			
MRC-SW2A-060914	R1404414-002	48,301	2.81
Continuing Cal. Verification	RQ1406578-04	43,014	2.82

Results flagged with an asterisk (*) indicate values outside control criteria.

Preparation Information Benchsheet

Prep Run#: 210544
Team: Semivoa GCMS/LPRUNOSKE

Prep WorkFlow: OrgExt SPE Aq28
Prep Method: Method

Status: Prepped
Prep Date/Time: 6/13/14 08:30 AM

#	Lab Code	Client ID	B#	Amt. Ext.	Method /Test	pH	AE	BN	Final Vol	Sample Desc. (Initial/Final)	SpikeAmt./Inv. ID	Comments
1	RQ1406525-01	MB		100mL	522/1,4-Dioxane FP	7	x		2.00mL		200.0000 uL/69135; 10.0000 uL/69806	
2	RQ1406525-02	LCS		100mL	522/1,4-Dioxane FP	7	x		2.00mL		200.0000 uL/69716; 10.0000 uL/69806; 200.0000 uL/69135	
3	RQ1406525-03	DLCS		100mL	522/1,4-Dioxane FP	7	x		2.00mL		200.0000 uL/69135; 200.0000 uL/69716; 10.0000 uL/69806	
4	RQ1406525-04	LCS		100mL	522/1,4-Dioxane FP	<4			2.00mL		1.0000 mL/68909; 200.0000 uL/69135; 10.0000 uL/69806	
5	R1404353-001	MRC-MW-14A-060414	.01	100mL	522/1,4-Dioxane FP	<4			2.00mL		200.0000 uL/69135; 10.0000 uL/69806	
6	R1404353-002	MRC-MW-14C-060414	.07	100mL	522/1,4-Dioxane FP	<4			2.00mL		10.0000 uL/69806; 200.0000 uL/69135	
7	R1404353-003	MRC-MW-14B-060514	.01	100mL	522/1,4-Dioxane FP	<4			2.00mL		10.0000 uL/69806; 200.0000 uL/69135	
8	R1404353-009	MRC-MW-17A-060514	.06	100mL	522/1,4-Dioxane FP	<4			2.00mL		10.0000 uL/69806; 200.0000 uL/69135	
9	R1404353-012	MRC-EXT-06-060514	.07	100mL	522/1,4-Dioxane FP	<4			2.00mL		200.0000 uL/69135; 10.0000 uL/69806	
10	R1404414-001	MRC-SW1A-060914	.05	100mL	522/1,4-Dioxane FP	<4			2.00mL		200.0000 uL/69135; 10.0000 uL/69806	
11	R1404414-002	MRC-SW2A-060914	.05	100mL	522/1,4-Dioxane FP	<4			2.00mL		10.0000 uL/69806; 200.0000 uL/69135	

Spiking Solutions

Name:	EPA 522 MDL Spike 4ppb	Inventory ID	68909	Logbook Ref:		Expires On:	08/05/2014
Name:	1,4-Dioxane-d8 1ppm Surr. Std.	Inventory ID	69135	Logbook Ref:		Expires On:	10/07/2014
Name:	EPA 522 LCS Spike 5ppm	Inventory ID	69716	Logbook Ref:		Expires On:	08/05/2014
Name:	SVOA Tetrahydrofuran-D8 100ppm	Inventory ID	69806	Logbook Ref:		Expires On:	07/30/2014

Preparation Materials

Method 522 400mg charcoal filters	(70422)	Eppendorf Pipette Repeater	EXT #13 (41092)	Water Deionized H2O	DI System (2262)
Dichloromethane (Methylene Chloride) 99.9% MeCl2	canister (70650)	Methanol Purge & Trap MeOH	64288 (64288)	Sodium Bisulfate Monohydrate RG	(55717)
Prepared Sodium Sulfate Na2SO4	(70845)				

SAMPLE ID MRC-SW1A-060914

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST	IS AMOUNT (NG)	Final Extract Volume (UL)	AVE RRF	CONCENTRATION PPB
49772	1	1374	0.5	2000	1.1800	0.23
			Amt. inj	**Sample Volume (ML)**		
			1	100		

1,4-Dioxane = 0.235 ug/L

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\5975E\data\061314\
Data File : Af949.D
Acq On : 13 Jun 2014 2:39 pm
Operator : m.pedro
Sample : r1404414-001 MRC-SWIA-060914
Misc : 06/13/14 522
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Jun 13 19:26:25 2014
Quant Method : I:\ACQUDATA\5975E\METHODS\SDIOX050214.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon May 05 07:43:33 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d8-THF	2.808	46	49772	500.00	PPB	-0.03
System Monitoring Compounds						
3) SURR,1,4-DIOXANE-d8	3.859	96	9160	91.89	PPB	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.89%			
Target Compounds						Qvalue
2) 1,4-Dioxane	3.923	88	1374	11.77	PPB	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

APPENDIX C—CHEMICAL RESULTS DATA TABLES

TABLE C-1

CHEMICAL RESULTS FOR SURFACE WATER SAMPLES - DARK HEAD COVE AND COW PEN CREEK, JUNE 2014
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

LOCATION	MRC-SW1A	MRC-SW2A	MRC-SW5A1	MRC-SW5A2	MRC-SW5B	MRC-SW6A	MRC-SW6B	MRC-SW7A
SAMPLE ID	MRC-SW1A-060914	MRC-SW2A-060914	MRC-SW5A1-060914	MRC-SW5A2-	MRC-SW5B-060914	MRC-SW6A-060914	MRC-SW6B-060914	MRC-SW7A-060914
SAMPLE DATE	20140610	20140610	20140610	20140610	20140610	20140610	20140610	20140610
VOLATILES (UG/L)								
1,1,1,2-TETRACHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,1-TRICHLOROETHANE	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
1,1,2,2-TETRACHLOROETHANE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
1,1-DICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U
1,1-DICHLOROPROPENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,2,3-TRICHLOROBENZENE	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
1,2,3-TRICHLOROPROPANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,2,4-TRICHLOROBENZENE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,2,4-TRIMETHYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
1,2-DIBROMOETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,2-DICHLOROBENZENE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,2-DICHLOROETHANE	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
1,2-DICHLOROPROPANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,4-DICHLOROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
2-BUTANONE	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ
2-CHLOROETHYL VINYL ETHER	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
2-CHLOROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4-CHLOROTOLUENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
4-ISOPROPYLTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PENTANONE	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U
ACETONE	2.8 U	1.9 U	1.6 U	1.6 U	1.3 U	1.6 U	1.6 U	1.3 UJ
BENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
BROMOCHLOROMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMOFORM	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
BROMOMETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
CARBON DISULFIDE	0.22 U	0.22 U	0.24 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
CARBON TETRACHLORIDE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROBENZENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
CHLORODIBROMOMETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CHLOROETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
CHLOROFORM	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CHLOROMETHANE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U

TABLE C-1

CHEMICAL RESULTS FOR SURFACE WATER SAMPLES - DARK HEAD COVE AND COW PEN CREEK, JUNE 2014
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND
PAGE 2 OF 4

LOCATION SAMPLE ID SAMPLE DATE	MRC-SW1A MRC-SW1A-060914 20140610	MRC-SW2A MRC-SW2A-060914 20140610	MRC-SW5A1 MRC-SW5A1-060914 20140610	MRC-SW5A2 MRC-SW5A2- 20140610	MRC-SW5B MRC-SW5B-060914 20140610	MRC-SW6A MRC-SW6A-060914 20140610	MRC-SW6B MRC-SW6B-060914 20140610	MRC-SW7A MRC-SW7A-060914 20140610
CIS-1,3-DICHLOROPROPENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
DIBROMOMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
DICHLORODIFLUOROMETHANE	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
DIISOPROPYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYL TERT-BUTYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
ISOPROPYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
M+P-XYLENES	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
METHYL TERT-BUTYL ETHER	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
METHYLENE CHLORIDE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
NAPHTHALENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-BUTYLBENZENE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
N-PROPYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
STYRENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-AMYL METHYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERTIARY-BUTYL ALCOHOL	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOTAL XYLENES	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
TRANS-1,2-DICHLOROETHENE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
TRANS-1,3-DICHLOROPROPENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	0.22 U	0.22 U	0.22 U	0.3 J	0.22 U	0.52 J	0.39 J	0.44 J
TRICHLOROFLUOROMETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
VINYL CHLORIDE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
SEMIVOLATILES (UG/L)								
1,4-DIOXANE	0.235 J	0.156 J	NA	NA	NA	NA	NA	NA
POLYCHLORINATED BIPHENYLS (UG/L)								
DECACHLOROBIPHENYL	NA	NA	0.018 U	0.022 U	0.018 U	0.018 U	0.018 U	0.018 U
DICHLOROBIPHENYLS	NA	NA	0.0044 U	0.0054 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U
HEPTACHLOROBIPHENYLS	NA	NA	0.011 U	0.014 U	0.011 U	0.011 U	0.011 U	0.011 U
HEXACHLOROBIPHENYL	NA	NA	0.01 U	0.013 U	0.01 U	0.01 U	0.01 U	0.01 U
NONACHLOROBIPHENYLS	NA	NA	0.019 U	0.024 U	0.019 U	0.019 U	0.019 U	0.019 U
OCTACHLOROBIPHENYLS	NA	NA	0.0084 U	0.011 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U
PENTACHLOROBIPHENYLS	NA	NA	0.0088 U	0.011 U	0.0088 U	0.0088 U	0.015	0.012
TETRACHLOROBIPHENYLS	NA	NA	0.011	0.024	0.016	0.0066 J	0.0071 J	0.0054 U
TOTAL MONOCHLOROBIPHENYLS	NA	NA	0.0017 U	0.0021 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U
TRICHLOROBIPHENYLS	NA	NA	0.0034 U	0.0042 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U

TABLE C-1

CHEMICAL RESULTS FOR SURFACE WATER SAMPLES - DARK HEAD COVE AND COW PEN CREEK, JUNE 2014
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

LOCATION	MRC-SW7B	MRC-SW8A	MRC-SW8B	MRC-SW9A	MRC-SW9B
SAMPLE ID	MRC-SW7B-060914	MRC-SW8A-060914	MRC-SW8B-060914	MRC-SW9A-060914	MRC-SW9B-060914
SAMPLE DATE	20140610	20140610	20140610	20140610	20140610
VOLATILES (UG/L)					
1,1,1,2-TETRACHLOROETHANE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,1-TRICHLOROETHANE	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
1,1,2,2-TETRACHLOROETHANE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
1,1-DICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U
1,1-DICHLOROPROPENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,2,3-TRICHLOROBENZENE	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
1,2,3-TRICHLOROPROPANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,2,4-TRICHLOROBENZENE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,2,4-TRIMETHYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
1,2-DIBROMOETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,2-DICHLOROBENZENE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
1,2-DICHLOROETHANE	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
1,2-DICHLOROPROPANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,4-DICHLOROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
2-BUTANONE	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ	0.81 UJ
2-CHLOROETHYL VINYL ETHER	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
2-CHLOROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4-CHLOROTOLUENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
4-ISOPROPYLTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PENTANONE	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U
ACETONE	1.4 U	1.8 U	1.5 U	1.3 UJ	1.5 U
BENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
BROMOCHLOROMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMOFORM	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
BROMOMETHANE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
CARBON DISULFIDE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
CARBON TETRACHLORIDE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROBENZENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
CHLORODIBROMOMETHANE	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CHLOROETHANE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
CHLOROFORM	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CHLOROMETHANE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U

TABLE C-1

CHEMICAL RESULTS FOR SURFACE WATER SAMPLES - DARK HEAD COVE AND COW PEN CREEK, JUNE 2014
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

LOCATION	MRC-SW7B	MRC-SW8A	MRC-SW8B	MRC-SW9A	MRC-SW9B
SAMPLE ID	MRC-SW7B-060914	MRC-SW8A-060914	MRC-SW8B-060914	MRC-SW9A-060914	MRC-SW9B-060914
SAMPLE DATE	20140610	20140610	20140610	20140610	20140610
CIS-1,3-DICHLOROPROPENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
DIBROMOMETHANE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
DICHLORODIFLUOROMETHANE	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
DIISOPROPYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYL TERT-BUTYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
ISOPROPYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
M+P-XYLENES	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
METHYL TERT-BUTYL ETHER	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
METHYLENE CHLORIDE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
NAPHTHALENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-BUTYLBENZENE	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
N-PROPYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
STYRENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-AMYL METHYL ETHER	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERTIARY-BUTYL ALCOHOL	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOTAL XYLENES	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
TRANS-1,2-DICHLOROETHENE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
TRANS-1,3-DICHLOROPROPENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	0.49 J	0.54 J	0.47 J	0.45 J	0.47 J
TRICHLOROFLUOROMETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
VINYL CHLORIDE	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
SEMIVOLATILES (UG/L)					
1,4-DIOXANE	NA	NA	NA	NA	NA
POLYCHLORINATED BIPHENYLS (UG/L)					
DECACHLOROBIPHENYL	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
DICHLOROBIPHENYLS	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U
HEPTACHLOROBIPHENYLS	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
HEXACHLOROBIPHENYL	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
NONACHLOROBIPHENYLS	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
OCTACHLOROBIPHENYLS	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U
PENTACHLOROBIPHENYLS	0.0088 U	0.0088 U	0.0088 U	0.0088 U	0.0088 U
TETRACHLOROBIPHENYLS	0.0054 U	0.0066 J	0.0054 U	0.0054 U	0.0054 U
TOTAL MONOCHLOROBIPHENYLS	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U
TRICHLOROBIPHENYLS	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U

J - Positive result is considered estimated as a result of technical noncompliance.
MRC - Middle River Complex
NA - not analyzed
SW - surface water
U - Not detected at the detection limit shown left of the letter.
UG/L - micrograms per liter (i.e., parts per billion)
UJ -The analyte was not detected. However, the quantitation or detection limit may be inaccurate or imprecise.

Table C-2

Primary VOC and 1,4-Dioxane Results for Surface Water Samples, 2012-2014
Cow Pen Creek and Dark Head Cove
Lockheed Martin Middle River Complex, Middle River, Maryland

Location/Date	Trichloroethene (µg/L)	cis-1,2-Dichloroethene (µg/L)	Vinyl chloride (µg/L)	1,4-Dioxane (µg/L)
Cow Pen Creek				
SW1A				
2014 (June)	--	--	--	0.235 J
2013 (June)	0.33 J	--	--	--
2012 (June)	--	--	--	NA
SW2A				
2014 (June)	--	--	--	0.156 J
2013 (June)	--	--	--	--
2012 (June)	--	--	--	NA
Dark Head Cove				
SW5A1				
2014 (June)	--	--	--	NA
2013 (June)	1.1	0.17 J	--	NA
2012 (June)	0.17 J	--	--	NA
SW5A2				
2014 (June)	0.3 J	--	--	NA
2013 (June)	1.9	0.26 J	--	NA
2012 (June)	0.19 J	--	--	NA
SW5B				
2014 (June)	--	--	--	NA
2013 (June)	1.5	0.35 J	--	NA
2012 (June)	0.19 J	--	--	NA
SW6A				
2014 (June)	0.52 J	--	--	NA
2013 (June)	0.46 J	--	--	NA
2012 (June)	0.55 J	--	--	NA
SW6B				
2014 (June)	0.39 J	--	--	NA
2013 (June)	0.81 J	--	--	NA
2012 (June)	0.63 J	--	--	NA
SW7A				
2014 (June)	0.44 J	--	--	NA
2013 (June)	0.7 J	--	--	NA
2012 (June)	--	--	--	NA
SW7B				
2014 (June)	0.49 J	--	--	NA
2013 (June)	0.51 J	--	--	NA
2012 (June)	0.32 J	--	--	NA
SW8A				
2014 (June)	0.54 J	--	--	NA
2013 (June)	0.65 J	--	--	NA
2012 (June)	0.66 J	--	--	NA
SW8B				
2014 (June)	0.47 J	--	--	NA
2013 (June)	0.65 J	--	--	NA
2012 (June)	0.82 J	--	--	NA
SW9A				
2014 (June)	0.45 J	--	--	NA
2013 (June)	0.62 J	--	--	NA
2012 (June)	0.33 J	--	--	NA
SW9B				
2014 (June)	0.47 J	--	--	``
2013 (June)	0.35 J	--	--	NA
2012 (June)	0.34 J	--	--	NA

-- not detected
NA - not analyzed
J - estimated concentration
VOC - volatile organic compound
µg/L - micrograms per liter

APPENDIX D—RISK ESTIMATES FOR RECREATIONAL SWIMMING IN DARK HEAD COVE

Memorandum

To: *Michael Martin, P.G. Tetra Tech*

From: Edmund Crouch

Edmund Crouch

Date: *November 18, 2014*

Subject: *Risk estimates for recreational swimming in Dark Head Cove*

As requested, we have evaluated risk estimates for recreational contact with water containing dissolved PCBs in the water column at Dark Head Cove. These risk estimates are conservative, in that they address the activity associated with the greatest level of exposure — that is, swimming — and make very conservative exposure assumptions for exposure time, duration and contact rates in the absence of site-specific measurements. In particular, we assume:

- The measurements represent dissolved PCBs in the water column (*i.e.,* the samples include no contaminated sediment). The samples were not filtered and the total PCB values reported may include some component of suspended sediment which would result in an overestimation of dissolved PCB concentrations.
- The measurements are representative of the water in Dark Head Cove where recreational swimming might occur. The samples were collected off the Middle River Complex outfalls where the concentrations would be expected to be the highest in the cove.
- The recreational swimmer is in the water for 4 hours/day, 70 days/year, for 6 years as a child and 20 years as an adult.
- The tetrachlorobiphenyls and pentachlorobiphenyls detected have an ingestion carcinogenic potency equal to the highest current estimate for the most carcinogenic tested PCB mixture. Other cancer potency values are available which would result in lower estimated potential risk.
- The tetrachlorobiphenyls and pentachlorobiphenyls detected have an ingestion reference dose (RfD) equal to that of Aroclor 1254, the lowest among PCB mixtures that have assigned RfDs.
- Cancer potency and RfD are the same for dermal exposure as for ingestion exposure.

The recreational activity exposure assumptions of 4 hours/day and 70 days/year were initially introduced in the January 2006 *Revised Human Risk Assessment for Martin State Airport* prepared for Lockheed Martin by Tetra Tech. In the subsequent April 2006 report *Surface Water and Sediment Sampling Report Lockheed Martin Middle River Complex* prepared by Tetra Tech, the 70

day/year exposure frequency assumption was used for swimming exposures, but with a 2 hours/day exposure time. It is important to note for a recreational swimming exposure scenario, adjusting the exposure time from four hours to two hours does not reduce the cancer or noncancer risk by a factor of two. For ingestion of surface water, the risk estimate scales linearly with the daily exposure time; while for dermal contact with surface water, the risk estimate is a sub-linear function of the daily exposure time. In other words, for dermal exposure absorption continues even after the exposure time in the water has ended.

With the stated site-specific exposure assumptions, and using other default exposure assumptions from the Regional Screening Level (RSL) table (EPA 2014a), together with the dermal exposure methodology described in the Risk Assessment Guidance for Superfund, Volume 1E, and the estimated 95 percent upper confidence limit (95% UCL) of the mean of the measurements as exposure point concentrations, the lifetime risk estimates are:

Incidental water ingestion	1.7×10^{-8}
Dermal absorption	4.9×10^{-6}

with highest hazard quotients (for children)

Incidental water ingestion	0.003
Dermal absorption	0.47

The calculations documenting these estimates are included in the accompanying workbook *Dark Head Cove Swimming PCBs.xlsx*, which also contains references for the values of all parameters used.

Modifying the daily exposure period to 2 hours/day halves the incidental water ingestion lifetime risk estimate and reduces the dermal absorption estimate to 3.2×10^{-6}, with similar effects on the hazard quotients (0.0014 and 0.30).

There are considerable uncertainties in these estimates that have been resolved in a conservative direction. As noted, the samples were not filtered, allowing potential incorporation of contaminated sediment, which would not contribute to dermal absorption — the dermal absorption calculation assumes dissolved PCBs. Two observations support the likelihood of sediment incorporation in the samples — the lack of detection of the more soluble (lower chlorinated) homologs, and the analysis of sample MRC-SW8B. This sample as originally tested contained a higher total PCB content than any other sample; but those results were rejected because of low recovery of the spike surrogates. Re-extraction and re-analysis of the sample produced non-detect results, suggesting that the first extraction included contaminated sediment (that may also have contributed to the low surrogate recovery) that was missing from the second.

The default ingestion rate of 50 ml/hour assumed for both children and adults as presented in EPA's RSL Risk-Based Concentration Table Equations for a recreational user exposed to surface water may be a conservative assumption for this evaluation. The Exposure Factors Handbook (EPA 2011) recommends a swimming water ingestion rate of 50 ml/hour for children under 18, but

a value of 21 ml/hour for adults which likely contributes to an overestimation of risk for the adult population swimming in Dark Head Cove. Further, the 50 ml/hour value is based on mean ingestion rates derived from swimming pool studies, while results from seawater ingestion studies indicate lower mean values for children (31 ml/hour), men (27 ml/hour and women (18 ml/hour) (EPA 2011). Dark Head Cove averages approximately 2% salt content, closer to seawater than the fresh water of swimming pools. Therefore, the use of the EPA default surface water ingestion rate likely overestimates ingestion risk.

There are additional uncertainties related to dermal risk estimates. In general, chemical specific permeability coefficients (Kp) are used to estimate dermal absorption of a chemical from water. A Kp is a predicted value obtained from a regression equation using a chemical-specific octanol-water coefficient (Kow) and molecular weight (MW). However, for some chemicals, the Kow value or the MW may be too high or too low (outside the effective prediction domain) and the estimated Kp using the regression is uncertain. For PCBs, both the Kow and MW values are high outside of effective prediction domain resulting in an uncertain predicted Kp value that is combined with a theoretical correction factor (EPA 2004).

The assignment of the highest (most conservative) carcinogenic and noncarcinogenic toxicity values measured for any PCB mixtures for the combinations of PCB homologs measured here (where only tetrachlorobiphenyls and pentachlorobiphenyls were detected) likely overestimates risk calculations

Even with the use of conservative assumptions, the resultant risk estimates lie below the MDE threshold of 1×10^{-5} lifetime increased cancer risk and hazard quotient of 1.0, and within the EPA's range 1×10^{-6} to 1×10^{-4} and hazard quotient of 1.0, indicating no significant risk from exposures due to swimming in Dark Head Cove.

References

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U.S. EPA (2014b). Integrated Risk Information System (IRIS), online database. Available at http://www.epa.gov/iris/

Recreational swimming in Dark Head Cove (1)

Copy the relevant two columns from here (ranges I9:J27 or L9:M27) to the active location at D9:E27.

				Upper end estimate used		Alternative estimate that could be used, taking better account of measurements.	
Exposure parameters		Unit	Value	Source	Value	Source	
Water ingestion rate while swimming							
	Child	ml/hr	50	EPA 2014	50	EPA 2014	28.61538 Schets et al. (2011); EFH Table 3-92. Mean value (ratio of means for ingestion volume and duration) for seawater. (5)
	Adults	ml/hr	50	EPA 2014	50	EPA 2014	31.17073 Schets et al. (2011); EFH Table 3-92. Mean value (ratio of means for ingestion volume and duration) for seawater. Average of men and women. (5)
Activity factors (common to children and adults)							
	Daily events	events/day	1	(2)(3)	1	(2)(3)	1 (2)(3)
	Event duration child	hr/event	4	(3)(4)	4	(3)(4)	1.083333 Schets et al. (2011); EPA (2011) (EFH) Table 3-92. Mean value, seawater. (5)
	Event duration adult	hr/event	4	(3)(4)	4	(3)(4)	0.716667 Schets et al. (2011); EPA (2011) (EFH) Table 3-92. Mean value, seawater, average of men & women. (5)
	Annual number of days	days/yr	70	(2)(3)	70	(2)(3)	70 (2)(3)
Exposure period							
	Child	yr	6	EPA 2014 (Resident exposure duration - child	6	EPA 2014	6 EPA 2014
	Adult	yr	20	EPA 2014 (Resident exposure duration -adult	20	EPA 2014	5.7 EFH 2011, Table 16-108 mean value of residence time.
Body weight							
	Child	kg	15	EPA 2014	15	EPA 2014	15 EPA 2014
	Adult	kg	80	EPA 2014	80	EPA 2014	80 EPA 2014
Skin surface area							
	Child	cm^2	6378	EPA 2014	6378	EPA 2014	6378 EPA 2014
	Adult	cm^2	20900	EPA 2014	20900	EPA 2014	20900 EPA 2014
Averaging time for carcinogens							
	Lifetime	yr	70	EPA 2014	70	EPA 2014	70 EPA 2014
		days	25567.5				
PCB-specific							
	Potency	kg-d/mg	2	IRIS 2014; upper bound, high risk & persistence; assumed equal for ingestion & dermal exposure			
	RfD	mg/kg-d	2.00E-05	IRIS 2014; Aroclor 1254			
Ingestion							
	Total PCB concentration	mg/ml	2.35E-08	See sheet PCBs. Sum of ProUCL95 recommended UCL95 estimates for tetra- & penta-chlorobiphenyl			
	Child dose-rate during expo	mg/kg-d	6.01E-08				
	Adult dose-rate during expc	mg/kg-d	1.13E-08				
	Lifetime average dose-rate	mg/kg-d	8.36E-09				
	Lifetime risk estimate		1.7E-08	Non-mutagenic so no early life adjustment to potency.			
	Child hazard quotient		0.003				
	Adult hazard quotient		0.0006				
Dermal absorption							
	Child absorbed dose per eve	mg/cm^2-ever	1.16E-07	See sheet PCBs for calculation of DA_event for each homolog.			
	Adult absorbed dose per event		1.16E-07	See sheet PCBs for calculation of DA_event for each homolog.			
	Child dose-rate during expo	mg/kg-d	9.47E-06				
	Adult dose-rate during expc	mg/kg-d	5.82E-06				
	Lifetime average dose rate	mg/kg-d	2.47E-06				
	Lifetime risk estimate		4.9E-06	Non-mutagenic so no early life adjustment to potency.			
	Child hazard quotient		0.47				
	Adult hazard quotient		0.29				

Total risk	5.0E-06
Hazard index	0.48

References

(1) Recreational user is a local resident who swims in Dark Head Cove, with the assumption that the entire body is exposed to surface water.

(2) Exposure assumption was employed in the 2006 HHRA for Dark Head Cove in Surface Water and Sediment Sampling Report Lockheed Martin Middle River Complex prepared by Tetra Tech.

(3) Exposure assumption in the 2006 Revised Human Risk Assessment for Martin State Airport prepared for Lockheed Martin by Tetra Tech.

(4) The dermal risk estimate is sub-linear in event duration, while the ingestion estimate is linear, for exposure to dissolved PCBs in water. The 2006 HHRA for Dark Head Cove used a 2 hr event duration, but the risk estimate for dermal exposure to PCBs from sediments in that HHRA is independent of event duration.

(5) Schets et al. (2011) state that frequency of bathing, duration of bathing, and swallowed volume were effectively uncorrelated.

IRIS 2014 Integrated Risk Information System at http://www.epa.gov/iris/subst/0294.htm

EPA 2011. Exposure Factors Handbook: 2011 Edition. EPA/600/R-09/052F, September 2011. Available at http://www.epa.gov/ncea/efh/pdfs/efh-complete.pdf.

EPA 2014. Regional Screening Table - User's Guide Table 1 at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm

Schets FM, Schijven JF, de Roda Husman AM. Exposure assessment for swimmers in bathing waters and swimming pools. Water Res. 2011 Mar;45(7):2392–2400. doi: 10.1016/j.watres.2011.01.025.

Correlations for logKow and log S_WL using Table 21 of Li N, Wania F, Lei YD, Daly GL. A Comprehensive and Critical Compilation, Evaluation, and Selection of Physical–Chemical Property Data for Selected Polychlorinated Biphenyls. J Phys Chem Ref Data 2003;32(4):1545–1590.
Estimate Kp using RAGS 1E equation 3.8, ignoring possibility of being outside effective prediction domain (EPD)
Then follow RAGS 1E Appendix A, setting FA to the nearest 0.1 (rounded up) from Exhibit A-5 of RAGS 1E

RAGS 1E. U.S. EPA 2004. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005, OSWER 9285.7-02EP, July 2004.

Calculation of DA_event for each homolog

		Li et al (200	RAGS 1E Eq. 3.8		RAGS 1E Appendix A								Child	Adult	Effective Prediction Domain for Kp						
															Boundary 1			Boundary 2			
	MW	logKow	logKp	Kp/cm/hr	B	l_sc/cm	Dsc/cm^2/	tau_event/	c	b	t*	FA (from E	Conc./mg/l	DA_event/mg/	DA_event/mg/cm2-event	EPD_low	Actual	EPD_high	EPD_low	Actual	EPD_high	Inside or outside EPD
Tetrachlorobiphenyl	291.99	6.108273	-0.40368	0.394745	2.59434	1.00E-03	3.67E-08	4.53934	2.687078	5.537589	18.94638	0.9	1.24E-08	5.18845E-08	5.19E-08	-0.06831	0.492043	0.5577	-0.301	0.194038	0.1758	Outside
Pentachlorobiphenyl	326.43	6.545661	-0.30787	0.492185	3.420188	1.00E-03	2.36E-08	7.077123	3.495599	8.942716	30.21214	0.8	1.11E-08	6.42733E-08	6.43E-08	-0.06831	0.534182	0.5577	-0.301	0.201027	0.1758	Outside
													Tot_derma	1.16158E-07	1.16E-07							

Solubility check; are the measurements consistent with dissolved PCBs? Solubility estimates from Li et al (2003) see above

Temperature	20	C							
Gas_Constant	8.314462	J/K/mol		Solubility (sub-cooled	Typical values			Approx solubility (solid)	
	MW	logS_WL	S_WL/mol/	ug/L	DeltaS_fus/J/K/mol		multiplier	ug/L	
Tetrachlorobiphenyl	291.99	-3.43825	0.000365	106.4437	56	87	0.214519	22.83424	Measurements are far below solubility so may represent dissolved PCBs
Pentachlorobiphenyl	326.43	-3.96174	0.000109	35.64955	56	100	0.15913	5.672902	

Check of typical values for DeltaS_fus and T_m; values as given by Li et al (2003) see above:

	DeltaS_fus	T_m/C
2,5,2',5'-tetrachlorobiphenyl	46.1	86.5
2,3,4,5-tetrachlorobiphenyl	69.1	90
2,4,5,2',5'-pentachlorobiphenyl	53.6	77
2,3,4,3',4'-pentachlorobiphenyl	56	117
2,4,5,3',4'-pentachlorobiphenyl	56	110

Measurements in Dark Head Cove only
Approximate DL by 1/2 the lowest measured value.
Treat J values as accurate enough for this evaluation.

Date 6/9/2014 Input file for ProUCL5 (data columns in microgram/liter)

	Tetra	D_Tetra	Penta	D_Penta
MRC-SW5A1	0.011	1	0.0088	0
MRC-SW5A2	0.024	1	0.011	0
MRC-SW5B	0.016	1	0.0088	0
MRC-SW6A	0.0066	1	0.0088	0
MRC-SW6B	0.0071	1	0.015	1
MRC-SW7A	0.0054	0	0.012	1
MRC-SW7B	0.0054	0	0.0088	0
MRC-SW8A	0.0066	1	0.0088	0
MRC-SW8B	0.0054	0	0.0088	0
MRC-SW9A	0.0054	0	0.0088	0
MRC-SW9B	0.0054	0	0.0088	0

ProUCL5 suggested UCL95	0.0124	0.0111	microgram/liter	See sheet 'ProUCL5.0 Output'.
ProUCL5 suggested UCL95	1.24E-08	1.11E-08	mg/ml	

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	11/10/2014 5:14:31 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Tetra

General Statistics

Total Number of Observations	11	Number of Distinct Observations	6
Number of Detects	6	Number of Non-Detects	5
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	0.0066	Minimum Non-Detect	0.0054
Maximum Detect	0.024	Maximum Non-Detect	0.0054
Variance Detects	4.8650E-5	Percent Non-Detects	45.45%
Mean Detects	0.0119	SD Detects	0.00697
Median Detects	0.00905	CV Detects	0.587
Skewness Detects	1.276	Kurtosis Detects	0.826
Mean of Logged Detects	-4.561	SD of Logged Detects	0.538

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.825	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.254	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00894	Standard Error of Mean	0.00188
SD	0.0057	95% KM (BCA) UCL	0.0121
95% KM (t) UCL	0.0124	95% KM (Percentile Bootstrap) UCL	0.0119
95% KM (z) UCL	0.012	95% KM Bootstrap t UCL	0.0174
90% KM Chebyshev UCL	0.0146	95% KM Chebyshev UCL	0.0171
97.5% KM Chebyshev UCL	0.0207	99% KM Chebyshev UCL	0.0277

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.494	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.7	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.284	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.333	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.065	k star (bias corrected MLE)	2.144
Theta hat (MLE)	0.00292	Theta star (bias corrected MLE)	0.00554
nu hat (MLE)	48.78	nu star (bias corrected)	25.72
MLE Mean (bias corrected)	0.0119	MLE Sd (bias corrected)	0.00812

95% Gamma Approximate KM-UCL (use when n>=50)	0.0127	95% Gamma Adjusted KM-UCL (use when n<50)	0.0134

57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62					Minimum	0.0066				Mean		0.011
63					Maximum	0.024				Median		0.01
64					SD	0.00503				CV		0.456
65					k hat (MLE)	6.966				k star (bias corrected MLE)		5.127
66					Theta hat (MLE)	0.00158				Theta star (bias corrected MLE)		0.00215
67					nu hat (MLE)	153.3				nu star (bias corrected)		112.8
68					MLE Mean (bias corrected)	0.011				MLE Sd (bias corrected)		0.00487
69										Adjusted Level of Significance (β)		0.0278
70					Approximate Chi Square Value (112.79, α)	89.27				Adjusted Chi Square Value (112.79, β)		85.87
71					95% Gamma Approximate UCL (use when n>=50)	0.0139				95% Gamma Adjusted UCL (use when n<50)		0.0145
72												
73	**Lognormal GOF Test on Detected Observations Only**											
74					Shapiro Wilk Test Statistic	0.862				**Shapiro Wilk GOF Test**		
75					5% Shapiro Wilk Critical Value	0.788				Detected Data appear Lognormal at 5% Significance Level		
76					Lilliefors Test Statistic	0.264				**Lilliefors GOF Test**		
77					5% Lilliefors Critical Value	0.362				Detected Data appear Lognormal at 5% Significance Level		
78	**Detected Data appear Lognormal at 5% Significance Level**											
79												
80	**Lognormal ROS Statistics Using Imputed Non-Detects**											
81					Mean in Original Scale	0.00755				Mean in Log Scale		-5.275
82					SD in Original Scale	0.00703				SD in Log Scale		0.952
83					95% t UCL (assumes normality of ROS data)	0.0114				95% Percentile Bootstrap UCL		0.0111
84					95% BCA Bootstrap UCL	0.0119				95% Bootstrap t UCL		0.0141
85					95% H-UCL (Log ROS)	0.0193						
86												
87	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
88					KM Mean (logged)	-4.861				95% H-UCL (KM -Log)		0.0122
89					KM SD (logged)	0.49				95% Critical H Value (KM-Log)		2.163
90					KM Standard Error of Mean (logged)	0.162						
91												
92	**DL/2 Statistics**											
93	**DL/2 Normal**									**DL/2 Log-Transformed**		
94					Mean in Original Scale	0.00771				Mean in Log Scale		-5.176
95					SD in Original Scale	0.00688				SD in Log Scale		0.803
96					95% t UCL (Assumes normality)	0.0115				95% H-Stat UCL		0.0152
97	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
98												
99	**Nonparametric Distribution Free UCL Statistics**											
100	**Detected Data appear Normal Distributed at 5% Significance Level**											
101												
102	**Suggested UCL to Use**											
103					95% KM (t) UCL	0.0124				95% KM (Percentile Bootstrap) UCL		0.0119
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											
107	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
108	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
109												

	A	B	C	D	E	F	G	H	I	J	K	L
110	**Penta**											
111												
112	**General Statistics**											
113	Total Number of Observations					11	Number of Distinct Observations					4
114	Number of Detects					2	Number of Non-Detects					9
115	Number of Distinct Detects					2	Number of Distinct Non-Detects					2
116	Minimum Detect					0.012	Minimum Non-Detect					0.0088
117	Maximum Detect					0.015	Maximum Non-Detect					0.011
118	Variance Detects					4.5000E-6	Percent Non-Detects					81.82%
119	Mean Detects					0.0135	SD Detects					0.00212
120	Median Detects					0.0135	CV Detects					0.157
121	Skewness Detects					N/A	Kurtosis Detects					N/A
122	Mean of Logged Detects					-4.311	SD of Logged Detects					0.158
123												
124	**Warning: Data set has only 2 Detected Values.**											
125	**This is not enough to compute meaningful or reliable statistics and estimates.**											
126												
127												
128	**Normal GOF Test on Detects Only**											
129	**Not Enough Data to Perform GOF Test**											
130												
131	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
132	Mean					0.00965	Standard Error of Mean					8.1967E-4
133	SD					0.00192	95% KM (BCA) UCL					N/A
134	95% KM (t) UCL					0.0111	95% KM (Percentile Bootstrap) UCL					N/A
135	95% KM (z) UCL					0.011	95% KM Bootstrap t UCL					N/A
136	90% KM Chebyshev UCL					0.0121	95% KM Chebyshev UCL					0.0132
137	97.5% KM Chebyshev UCL					0.0148	99% KM Chebyshev UCL					0.0178
138												
139	**Gamma GOF Tests on Detected Observations Only**											
140	**Not Enough Data to Perform GOF Test**											
141												
142	**Gamma Statistics on Detected Data Only**											
143	k hat (MLE)					80.67	k star (bias corrected MLE)					N/A
144	Theta hat (MLE)					1.6736E-4	Theta star (bias corrected MLE)					N/A
145	nu hat (MLE)					322.7	nu star (bias corrected)					N/A
146	MLE Mean (bias corrected)					N/A	MLE Sd (bias corrected)					N/A
147												
148	**Gamma Kaplan-Meier (KM) Statistics**											
149	k hat (KM)					25.22	nu hat (KM)					554.9
150							Adjusted Level of Significance (β)					0.0278
151	Approximate Chi Square Value (554.94, α)					501.3	Adjusted Chi Square Value (554.94, β)					493
152	95% Gamma Approximate KM-UCL (use when n>=50)					0.0107	95% Gamma Adjusted KM-UCL (use when n<50)					0.0109
153												
154	**Lognormal GOF Test on Detected Observations Only**											
155	**Not Enough Data to Perform GOF Test**											
156												
157	**Lognormal ROS Statistics Using Imputed Non-Detects**											
158	Mean in Original Scale					0.0069	Mean in Log Scale					-5.095
159	SD in Original Scale					0.00372	SD in Log Scale					0.505
160	95% t UCL (assumes normality of ROS data)					0.00894	95% Percentile Bootstrap UCL					0.00875
161	95% BCA Bootstrap UCL					0.00909	95% Bootstrap t UCL					0.0104
162	95% H-UCL (Log ROS)					0.00986						

	A	B	C	D	E	F	G	H	I	J	K	L
163												
164	**DL/2 Statistics**											
165	**DL/2 Normal**						**DL/2 Log-Transformed**					
166	Mean in Original Scale					0.00615	Mean in Log Scale					-5.203
167	SD in Original Scale					0.00371	SD in Log Scale					0.449
168	95% t UCL (Assumes normality)					0.00818	95% H-Stat UCL					0.00821
169	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
170												
171	**Nonparametric Distribution Free UCL Statistics**											
172	**Data do not follow a Discernible Distribution at 5% Significance Level**											
173												
174	**Suggested UCL to Use**											
175	95% KM (t) UCL					0.0111	95% KM (% Bootstrap) UCL					N/A
176	**Warning: One or more Recommended UCL(s) not available!**											
177												
178	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
179	Recommendations are based upon data size, data distribution, and skewness.											
180	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
181	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
182												

Data Package: Appendix B -SDG R1404414 - LOCKHEED MARTIN MRC - Proj. 06247.pdf

Inputs for ProUCL

	Tetrachlorobiphenyl	Pentachlorobiphenyl
MRC-SW5A1	0.011	0.0088 U
MRC-SW5A2	0.024	0.011 U
MRC-SW5B	0.016	0.0088 U
MRC-SW6A	0.0066 J	0.0088 U
MRC-SW6B	0.0071 J	0.015
MRC-SW7A	0.0054 U	0.012
MRC-SW7B	0.0054 U	0.0088 U
MRC-SW8A	0.0066 J	0.0088 U
MRC-SW8B	0.0054 U	0.0088 U
MRC-SW9A	0.0054 U	0.0088 U
MRC-SW9B	0.0054 U	0.0088 U

Appendix A, Qualified Analytical Results

										Unclear why Appendix A separates these two entries in this way			
	MRC-SW5A1-060914	MRC-SW5A2-060914	MRC-SW5B-060914	MRC-SW6A-060914	MRC-SW6B-060914	MRC-SW7A-060914	MRC-SW7B-060914	MRC-SW8A-060914	MRC-SW8B-060914	MRC-SW8B-060914	MRC-SW9A-060914	MRC-SW9B-060914
1 TOTAL MONOCHLORO	0.0017 U	0.0021 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U		0.0017 U	0.0017 U	0.0017 U
2 DICHLOROBIPHENYLS	0.0044 U	0.0054 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U		0.0044 U	0.0044 U	0.0044 U
3 TRICHLOROBIPHENYLS	0.0034 U	0.0042 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U		0.0034 U	0.0034 U
4 TETRACHLOROBIPHEN'	0.011	0.024	0.016	0.0054 J	0.0054 J	0.0054 U	0.0054 U	0.0054 J		0.0054 U	0.0054 U	0.0054 U
5 PENTACHLOROBIPHEN	0.0088 U	0.011 U	0.0088 U	0.0088 U	0.015	0.012	0.0088 U	0.0088 U	0.0088 U		0.0088 U	0.0088 U
6 HEXACHLOROBIPHENY	0.01 U	0.013 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U		0.01 U	0.01 U	0.01 U
7 HEPTACHLOROBIPHEN	0.011 U	0.014 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U		0.011 U	0.011 U	0.011 U
8 OCTACHLOROBIPHENY	0.0084 U	0.011 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U		0.0084 U	0.0084 U	0.0084 U
9 NONACHLOROBIPHEN'	0.019 U	0.024 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U		0.019 U	0.019 U	0.019 U
10 DECACHLOROBIPHENY	0.018 U	0.022 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U		0.018 U	0.018 U	0.018 U

Reconstruction from Appendix B									First extraction, QC fail	2nd extraction		
	MRC-SW5A1-060914	MRC-SW5A2-060914	MRC-SW5B-060914	MRC-SW6A-060914	MRC-SW6B-060914	MRC-SW7A-060914	MRC-SW7B-060914	MRC-SW8A-060914	MRC-SW8B-060914	MRC-SW8B-060914	MRC-SW9A-060914	MRC-SW9B-060914
Monochlorobiphenyls,	0.0017 U	0.0021 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U
Dichlorobiphenyls, Tot	0.0044 U	0.0054 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U
Trichlorobiphenyls, To	0.0034 U	0.0042 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0034 U	0.0061	0.0034 U	0.0034 U	0.0034 U
Tetrachlorobiphenyls, '	0.011	0.024	0.016	0.0066 J	0.0071 J	0.0054 U	0.0054 U	0.0066 J	0.0061 J	0.0054 U	0.0054 U	0.0054 U
Pentachlorobiphenyls,	0.0088 U	0.011 U	0.0088 U	0.0088 U	0.015	0.012	0.0088 U	0.0088 U	0.018	0.0088 U	0.0088 U	0.0088 U
Hexachlorobiphenyls, '	0.01 U	0.013 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Heptachlorobiphenyls,	0.011 U	0.014 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Octachlorobiphenyls, T	0.0084 U	0.011 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U
Nonachlorobiphenyls, '	0.019 U	0.024 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
Decachlorobiphenyls, '	0.018 U	0.022 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U

Check for differences between Ap												
Monochlorobiphenyls,									1	1		
Dichlorobiphenyls, Tot									1	1		
Trichlorobiphenyls, To									1	1	1	1
Tetrachlorobiphenyls, '				1	1			1	1	1		
Pentachlorobiphenyls,									1	1	1	1
Hexachlorobiphenyls, '									1	1		
Heptachlorobiphenyls,									1	1		
Octachlorobiphenyls, T									1	1		
Nonachlorobiphenyls, '									1	1		
Decachlorobiphenyls, '									1	1		

Appendix B, Results as reported by the Laboratory

		Extracted from the direct copy				Reconstruct Appendix A entries	
	Direct copy	Result	Q	MRL	MDL		
	MRC-SW5A1-060914					MRC-SW5A1-060914	
Monochlorobiphenyls, Total	0.0049 U 0.0049 0.0017	0.0049	U	0.0049	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0049 U 0.0049 0.0044	0.0049	U	0.0049	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0049 U 0.0049 0.0034	0.0049	U	0.0049	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.011 0.0098 0.0054	0.011		0.0098	0.0054	0.011	
Pentachlorobiphenyls, Total	0.0098 U 0.0098 0.0088	0.0098	U	0.0098	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010 U 0.010 0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.015 U 0.015 0.011	0.015	U	0.015	0.011	0.011	U
Octachlorobiphenyls, Total	0.015 U 0.015 0.0084	0.015	U	0.015	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.020 U 0.020 0.019	0.02	U	0.02	0.019	0.019	U
Decachlorobiphenyls, Total	0.025 U 0.025 0.018	0.025	U	0.025	0.018	0.018	U
	MRC-SW5A2-060914					MRC-SW5A2-060914	
Monochlorobiphenyls, Total	0.0061 U 0.0061 0.0021	0.0061	U	0.0061	0.0021	0.0021	U
Dichlorobiphenyls, Total	0.0061 U 0.0061 0.0054	0.0061	U	0.0061	0.0054	0.0054	U
Trichlorobiphenyls, Total	0.0061 U 0.0061 0.0042	0.0061	U	0.0061	0.0042	0.0042	U
Tetrachlorobiphenyls, Total	0.024 0.012 0.0066	0.024		0.012	0.0066	0.024	
Pentachlorobiphenyls, Total	0.012 U 0.012 0.011	0.012	U	0.012	0.011	0.011	U
Hexachlorobiphenyls, Total	0.013 U 0.013 0.013	0.013	U	0.013	0.013	0.013	U
Heptachlorobiphenyls, Total	0.018 U 0.018 0.014	0.018	U	0.018	0.014	0.014	U
Octachlorobiphenyls, Total	0.018 U 0.018 0.011	0.018	U	0.018	0.011	0.011	U
Nonachlorobiphenyls, Total	0.024 U 0.024 0.024	0.024	U	0.024	0.024	0.024	U
Decachlorobiphenyls, Total	0.030 U 0.030 0.022	0.03	U	0.03	0.022	0.022	U
	MRC-SW5B-060914					MRC-SW5B-060914	
Monochlorobiphenyls, Total	0.0048 U 0.0048 0.0017	0.0048	U	0.0048	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0048 U 0.0048 0.0044	0.0048	U	0.0048	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0048 U 0.0048 0.0034	0.0048	U	0.0048	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.016 0.0096 0.0054	0.016		0.0096	0.0054	0.016	
Pentachlorobiphenyls, Total	0.0096 U 0.0096 0.0088	0.0096	U	0.0096	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010 U 0.010 0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014 U 0.014 0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014 U 0.014 0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019 U 0.019 0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024 U 0.024 0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW6A-060914					MRC-SW6A-060914	
Monochlorobiphenyls, Total	0.0047 U 0.0047 0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047 U 0.0047 0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047 U 0.0047 0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0066 J 0.0094 0.0054	0.0066	J	0.0094	0.0054	0.0066	J
Pentachlorobiphenyls, Total	0.0094 U 0.0094 0.0088	0.0094	U	0.0094	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010 U 0.010 0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014 U 0.014 0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014 U 0.014 0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019 U 0.019 0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024 U 0.024 0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW6B-060914					MRC-SW6B-060914	
Monochlorobiphenyls, Total	0.0047 U 0.0047 0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047 U 0.0047 0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047 U 0.0047 0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0071 J 0.0094 0.0054	0.0071	J	0.0094	0.0054	0.0071	J
Pentachlorobiphenyls, Total	0.015 0.0094 0.0088	0.015		0.0094	0.0088	0.015	
Hexachlorobiphenyls, Total	0.010 U 0.010 0.010	0.01	U	0.01	0.01	0.01	U

Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024	U	0.024	0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW7A-060914								MRC-SW7A-060914	
Monochlorobiphenyls, Total	0.0050	U	0.0050	0.0017	0.005	U	0.005	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0050	U	0.0050	0.0044	0.005	U	0.005	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0050	U	0.0050	0.0034	0.005	U	0.005	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.010	U	0.010	0.0054	0.01	U	0.01	0.0054	0.0054	U
Pentachlorobiphenyls, Total	0.012		0.010	0.0088	0.012		0.01	0.0088	0.012	
Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.015	U	0.015	0.011	0.015	U	0.015	0.011	0.011	U
Octachlorobiphenyls, Total	0.015	U	0.015	0.0084	0.015	U	0.015	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.020	U	0.020	0.019	0.02	U	0.02	0.019	0.019	U
Decachlorobiphenyls, Total	0.025	U	0.025	0.018	0.025	U	0.025	0.018	0.018	U
	MRC-SW7B-060914								MRC-SW7B-060914	
Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	0.0094	U	0.0094	0.0054	0.0054	U
Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	0.0094	U	0.0094	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024	U	0.024	0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW8A-060914								MRC-SW8A-060914	
Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0066	J	0.0094	0.0054	0.0066	J	0.0094	0.0054	0.0066	J
Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	0.0094	U	0.0094	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024	U	0.024	0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW8B-060914								MRC-SW8B-060914	
Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0061		0.0047	0.0034	0.0061		0.0047	0.0034	0.0061	
Tetrachlorobiphenyls, Total	0.0061	J	0.0094	0.0054	0.0061	J	0.0094	0.0054	0.0061	J
Pentachlorobiphenyls, Total	0.018		0.0094	0.0088	0.018		0.0094	0.0088	0.018	
Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024	U	0.024	0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW8B-060914								MRC-SW8B-060914	
Monochlorobiphenyls, Total	0.0047	U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047	U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047	U	0.0047	0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0094	U	0.0094	0.0054	0.0094	U	0.0094	0.0054	0.0054	U
Pentachlorobiphenyls, Total	0.0094	U	0.0094	0.0088	0.0094	U	0.0094	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010	U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014	U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014	U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019	U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024	U	0.024	0.018	0.024	U	0.024	0.018	0.018	U
	MRC-SW9A-060914								MRC-SW9A-060914	

Monochlorobiphenyls, Total	0.0047 U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017	U
Dichlorobiphenyls, Total	0.0047 U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044	U
Trichlorobiphenyls, Total	0.0047 U	0.0047	0.0034	0.0047	U	0.0047	0.0034	0.0034	U
Tetrachlorobiphenyls, Total	0.0094 U	0.0094	0.0054	0.0094	U	0.0094	0.0054	0.0054	U
Pentachlorobiphenyls, Total	0.0094 U	0.0094	0.0088	0.0094	U	0.0094	0.0088	0.0088	U
Hexachlorobiphenyls, Total	0.010 U	0.010	0.010	0.01	U	0.01	0.01	0.01	U
Heptachlorobiphenyls, Total	0.014 U	0.014	0.011	0.014	U	0.014	0.011	0.011	U
Octachlorobiphenyls, Total	0.014 U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084	U
Nonachlorobiphenyls, Total	0.019 U	0.019	0.019	0.019	U	0.019	0.019	0.019	U
Decachlorobiphenyls, Total	0.024 U	0.024	0.018	0.024	U	0.024	0.018	0.018	U

	MRC-SW9B-060914						MRC-SW9B-060914	
Monochlorobiphenyls, Total	0.0047 U	0.0047	0.0017	0.0047	U	0.0047	0.0017	0.0017 U
Dichlorobiphenyls, Total	0.0047 U	0.0047	0.0044	0.0047	U	0.0047	0.0044	0.0044 U
Trichlorobiphenyls, Total	0.0047 U	0.0047	0.0034	0.0047	U	0.0047	0.0034	0.0034 U
Tetrachlorobiphenyls, Total	0.0094 U	0.0094	0.0054	0.0094	U	0.0094	0.0054	0.0054 U
Pentachlorobiphenyls, Total	0.0094 U	0.0094	0.0088	0.0094	U	0.0094	0.0088	0.0088 U
Hexachlorobiphenyls, Total	0.010 U	0.010	0.010	0.01	U	0.01	0.01	0.01 U
Heptachlorobiphenyls, Total	0.014 U	0.014	0.011	0.014	U	0.014	0.011	0.011 U
Octachlorobiphenyls, Total	0.014 U	0.014	0.0084	0.014	U	0.014	0.0084	0.0084 U
Nonachlorobiphenyls, Total	0.019 U	0.019	0.019	0.019	U	0.019	0.019	0.019 U
Decachlorobiphenyls, Total	0.024 U	0.024	0.018	0.024	U	0.024	0.018	0.018 U

Errors in the data package: Appendix B -SDG R1404414 - LOCKHEED MARTIN MRC - Proj. 06247.pdf
Corrected in ProUCL input.

Tetrachlorobiphenyls			
NSAMPLE	MRC-SW6A-060914	MRC-SW6B-060914	MRC-SW8A-060914
LAB_ID	R1404414-006	R1404414-007	R1404414-010
Appendix A (Qualified results)	14	15	15
RESULT (J qualified)	0.0054	0.0054	0.0054
Appendix B (Lab results) page	64	65	68
RESULT (J-qualified)	0.0066	0.0071	0.0066
MDL	0.0054	0.0054	0.0054