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October 4, 2016

**VIA PRIVATE CARRIER**

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

Subject: Transmittal of the Block I Building A and Building A Basement Vapor-Intrusion Investigation Report  
Lockheed Martin Corporation; Middle River Complex  
2323 Eastern Boulevard, Middle River, Baltimore County, Maryland

Dear Mr. Carroll:

For your review please find enclosed two hard copies with a CD of the above-referenced document. This document provides additional information regarding possible vapor-intrusion pathways and groundwater conditions in the Block I Building A basement at the Lockheed Martin Corporation Middle River Complex in Middle River, Maryland. We respectfully request to receive Maryland Department of the Environment's approval by November 14, 2016.

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

Sincerely,

A handwritten signature in black ink that reads "Lynnette Drake".

Lynnette Drake  
Remediation Project Lead, Environmental Remediation

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# Block I Building A and Building A Basement Vapor-Intrusion Investigation Report Lockheed Martin Middle River Complex 2323 Eastern Boulevard Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

Prepared by:

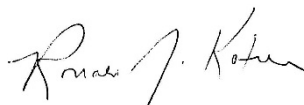
Tetra Tech, Inc.

October 2016



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Michael Martin, P.G.  
Regional Manager



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Ronald Kotun, Ph.D.  
Project Manager

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# ACRONYMS

ACM	asbestos-containing material
COC	chain of custody
DCA	dichloroethane
DCE	dichloroethene
DQO	data quality objective
EESH	energy, environment, safety, and health
EGIS	environmental graphical information system
ESH	environment, safety and health
FTMR	field-task modification request
GC/MS	gas chromatograph/mass spectrometer
HASP	health and safety plan
IA	indoor air
IAQ	indoor air quality
IDW	investigation-derived waste
LMCPI	LMC Properties, Inc.
Lockheed Martin	Lockheed Martin Corporation
$\mu\text{g}/\text{m}^3$	microgram(s) per cubic meter
MDE	Maryland Department of the Environment
MPL	mechanical prototype laboratory
MRC	Middle River Complex
MTBE	methyl-tertiary-butyl ether
PCE	tetrachloroethene
ppb	part(s) per billion
PM	project manager
PPE	personal protective equipment
QA	quality assurance
QC	quality control
SSD	sub-slab depressurization
SSDS	sub-slab-depressurization system
SV	sub-slab vapor
TCA	trichloroethane
TCE	trichloroethene

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Tetra Tech	Tetra Tech, Inc.
TMB	trimethylbenzene
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VI	vapor intrusion
VLS	vertical-launch system
VMP	vapor monitoring point
VOC(s)	volatile organic compound(s)

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# Section 1

## Introduction

On behalf of Lockheed Martin Corporation (Lockheed Martin), Tetra Tech, Inc. (Tetra Tech) has prepared the following report to provide additional information on possible vapor-intrusion pathways in Tax Block I in Building A and the Building A basement at the Lockheed Martin Middle River Complex (MRC) in Middle River, Maryland (see Figure 1-1). This report details the installation and sampling of a sub-slab-vapor monitoring point, as well as a portable gas chromatograph/mass spectrometer (GC/MS) chemical-identification-system survey in Building A that supplemented the general vapor-intrusion sampling done in February and March 2016 for Round 20. This report specifically addresses the possible impacts from historical plating shop operations, with a focus on trichloroethene (TCE) contamination.

Multiple waste-solvent tanks were reportedly once located beneath Building A, and their residuals might be influencing vapor concentrations within the basement. This report details the installation of (Vapor Pin™) vapor monitoring points and subsequent sub-slab sampling from the newly installed vapor monitoring points, the visual inspection of possible vapor-intrusion conduits, and a portable gas chromatograph/mass spectrometer (GC/MS) chemical-identification-system survey to detect trichloroethene. This investigation sought to identify possible vapor intrusion pathways in the Building A basement, as well as provide a possible explanation for the concentrations of trichloroethene that have been detected in indoor air (IA) in the southern portion of the basement since the Round 15 (August 2013) sampling. This investigation has sought to provide a technically sound vapor-intrusion-related visual-inspection program in the Building A basement to provide further information to mitigate vapor intrusion in Building A and its basement, to report investigation results, and provide recommendations for additional investigation, if deemed necessary.

The proposed Vapor Pin™ sampling locations were selected based on information obtained during interviews of current on-site personnel familiar with historical operations at the Middle River Complex. These locations allowed evaluation of the possible impact of historical contamination

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sources, and their possible effects on indoor air quality (IAQ) in Building A and the Building A basement. This report is organized as follows:

Section 2—Site Background: Briefly describes site history and previous investigations.

Section 3—Investigation Approach and Methodology: Presents the technical approaches to field activities and data management and describes the field methodologies employed.

Section 4—Results: Presents the field program results.

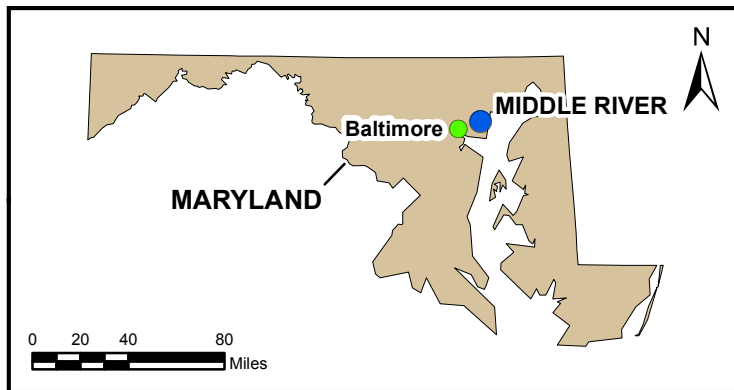
Section 5—Conclusions and Recommendations: Summarizes the investigation findings and provides recommendations.

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





2014 aerial photograph provided by U.S. Geological Survey.



**FIGURE 1-1**

**MIDDLE RIVER COMPLEX  
LOCATION MAP**

*Lockheed Martin Middle River Complex  
Middle River, Maryland*

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## Section 2

# Site Background

### 2.1 SITE HISTORY

The Middle River Complex (MRC) land parcels owned by LMC Properties, Inc. (LMCPI) are undergoing extensive site characterization studies to support remedial decisions under the supervision of the Maryland Department of the Environment (MDE) and, for some parcels, the United States Environmental Protection Agency (USEPA). Ongoing environmental characterization of the MRC has identified subsurface soil and groundwater contamination from volatile organic compounds (VOCs) under or near occupied workspaces (Tetra Tech, Inc. [Tetra Tech], 2006). If a complete pathway exists from the subsurface into a building, these compounds could volatilize and migrate into the workspace. Other non-subsurface indoor sources could also possibly affect contaminant concentrations in indoor air (IA), including emissions from process chemicals, building materials, and other sources, as well as ambient (outdoor) air contributions.

### 2.2 PREVIOUS INVESTIGATIONS

Ongoing environmental characterizations of the MRC have identified subsurface soil and groundwater impacts from VOCs under or close to occupied workspaces (Tetra Tech, 2006). Vapor-intrusion-related investigations from 2007 through 2015 confirm the presence of detectable concentrations of volatiles in both IA and sub-slab soil vapor.

#### 2.2.1 Initial Investigations

In August 2006, Lockheed Martin Corporation (Lockheed Martin) sampled sub-slab vapor (SV) beneath the Building A basement (Figure 2-1) and plating shop. (Tetra Tech, 2006). These locations were selected because VOC contamination had been observed in monitoring wells near the building foundation; these concentrations may be indicative of conditions beneath the building. Analytical results from the SV sampling, as well as other site-specific information, were used as inputs for a subsurface-vapor-transport model (Johnson and Ettinger model). The model estimated

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that human health risks due to inhalation of indoor air were at or below MDE and United States Environmental Protection Agency (USEPA) threshold values (Tetra Tech, 2006). However, because of the uncertainties inherent in modeling, a supplemental indoor air quality (IAQ) program was proposed to observe whether VOC contaminants were in indoor air, and, if so, whether they could be associated with subsurface VOC contamination at levels that exceed human-health risk limits.

IAQ data for the chemicals of concern are compared to risk-based screening levels derived using conservative (i.e., represented as more protective of human health and the environment) USEPA default exposure-assumptions and toxicity values. Screening-level concentrations are based on the risk levels acceptable to, and described in, MDE's *Voluntary Cleanup Program* guidance (i.e., a  $1 \times 10^{-5}$ , or a one in 100,000 excess lifetime-cancer-risk and/or a noncancer hazard quotient of 1). Past analyses indicate that migration of SV into indoor air may be occurring in limited locations. Trichloroethene (TCE) is the primary contaminant of concern. TCE in IA may be associated with SV migration at the Building A plating shop based on its co-occurrence with the related marker chemical *cis*-1,2-dichloroethene, found only in SV samples.

The results of the first three rounds of monitoring led the project team to recommend mitigation for locations where chemicals in SV were at concentrations above risk-based screening levels. The project team also recommended additional IAQ and SV sampling to address areas of uncertainty identified in subsequent monitoring rounds. In response to these recommendations, from March 12 through March 29, 2008, two sub-slab-depressurization systems (SSDSs) were installed to mitigate possible vapor intrusion.

One SSDS was installed beneath the Building A plating shop and the other was installed beneath the southern end of the Building C basement, with full system startup on March 31, 2008. Periodic combined IAQ and SV monitoring rounds continue to investigate possible sources of SV, evaluate the performance of the SSDSs, and directly monitor IA to confirm ongoing protection of worker health and safety, or to indicate additional actions that might be necessary. Investigation results to date have led to the expansion of the SSDSs in Building A (in 2010 and 2016) and Building C (in 2012), to address areas of SV contamination beyond the influence of the original systems.

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## 2.2.2 Recent Observations of Elevated Contaminant Concentrations in Building A Basement

Twenty rounds of IAQ, SV, and background monitoring have been completed at Block I (including Buildings A, B, and C) from December 2006 through February 2016. An extensive vapor monitoring point (VMP) network has been established across Buildings A, B, and C; Figure 2-2 is a building plan that shows IA and SV sampling locations. Analytical results from past monitoring rounds indicate that a subset of chemicals identified in the subsurface have also been detected in background and IAQ samples. Background air samples collected outdoors around the exterior of the facility measure on-site concentrations of chemicals that may be attributable to non-MRC sources, including other industry, Martin State Airport, vehicular traffic, and other urban sources; these results are used to identify possible chemical contributions from site operations.

Table 2-1 summarizes historical TCE concentrations detected at four select locations (093-A, 093X, 138-A, and 018-A) in the Building A basement. TCE was detected at a concentration greater than the screening level at one sampling location (093-A) in the Building A basement during the Round 15 (August 2013) IAQ investigation. Uncertainty regarding the source of the TCE (sub-slab soil vapor, indoor activities, or both) prompted additional investigations. Additional IA sampling in this area was conducted during February 2014 (Round 16) to further investigate the air quality within the Building A basement (Tetra Tech, 2015).

A portable gas chromatograph/mass spectrometer (GC/MS) instrument (an INFICON HAPSITE<sup>®</sup> from KD Analytical) was used in Building A basement (Figure 2-1) during the February 2014 sampling (Round 16) to provide real-time concentrations of VOCs in indoor air. The field-portable GC/MS is sufficiently sensitive and selective for use in vapor-intrusion applications. The portable GC/MS measured TCE concentrations in indoor air and was used to locate possible internal sources and sub-surface vapor conduits of TCE. The analysis was limited to TCE, as the instrument was calibrated to identify an ion specifically characteristic of that analyte, thus removing interference from other VOCs.

The survey was done in the southern portion of the Building A basement, from the area around Column D18 down to the southern wall. The instrument was used to scan the two general areas for possible physical sources of TCE such as tanks, utility corridors, floor grates/drains, storage cabinets, machines, and commercial products (Tetra Tech, 2015). Twenty-eight sampling locations

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were surveyed in the Building A basement, many of which were near physical features such as utility corridors, floor grates/drains, tanks and storage cabinets.

The portable GC/MS detected TCE (16.24 parts per billion [ppb], equivalent to  $87 \mu\text{g}/\text{m}^3$ ) at one location in the Building A basement, directly above a floor grate at floor level near Column D26. TCE was detected in IA using conventional sampling methods at two sampling locations near this grate ( $5.9 \mu\text{g}/\text{m}^3$  and  $1.6 \mu\text{g}/\text{m}^3$  at sampling locations 093-A and 138-A, respectively). Historical SV exceedances of the TCE screening level have also been reported at sampling location 093-A. This floor grate is suspected of being associated with the sanitary sewer system, and may serve as a preferential pathway from the soil vapor to this area of Building A (Tetra Tech, 2015).

During Round 17 (September 2014), TCE was detected in IA at concentrations greater than its screening level in the Building A basement at locations 093-A and 018-A, and also in the central portion of Building A near locations 118-A and 136-A. TCE exceedances were also detected in SV in the central portion of Building A. Because of these exceedances, three portable air-filtration units were placed in the Building A basement to mitigate TCE concentrations in indoor air. Each unit filters 300 cubic feet of indoor air per minute.

Subsequent to the addition of these filters, no exceedances were detected in the basement during Round 18 (February 2015) or Round 19 (August 2015). However, one sole exceedance of TCE in IA was detected during Round 18 at location 118-A in the main area of Building A. When this location was resampled two months later, TCE was detected at a concentration less than its screening level of  $8.8 \mu\text{g}/\text{m}^3$ . SV exceedances of TCE continued to occur in the central portion of Building A (079-A, 118-A, and 136-A). During Round 19 (August 2015), no IA exceedances were noted and the portable air-filtration units in the Building A basement appeared to be operating effectively, but SV TCE exceeded its screening level of  $290 \mu\text{g}/\text{m}^3$  at four locations (015-A, 079-A, 118-A, and 136-A) in the central portion of Building A.

During Round 20 in February 2016, the TCE concentration at location 093-A ( $6.4 \mu\text{g}/\text{m}^3$ ) did not exceed its screening level, but the TCE concentration ( $12 \mu\text{g}/\text{m}^3$ ) at a nearby basement location (138-A) did. However, when the same location was resampled one month later, the TCE concentration was less than its screening level. Note that, historically, TCE has not exceeded its screening level in indoor air at location 138-A. The initial exceedance at this location during

Round 20 indicates that the sub-slab source continues to contribute TCE to indoor air, despite the presence of the air-filtration units in the basement.

Because indoor air concentrations of TCE continue to exceed its screening level, even with the addition of the portable air-filtration units, additional investigation to determine possible sources and pathways of vapor intrusion were initiated. Subsequent sections of this report describe the additional investigation that focused on possible TCE impacts from historical operations in Building A and the Building A basement (Figure 2-1). These additional activities were performed in conjunction with the Round 20 IAQ and SV sampling conducted in Buildings A, B, and C in February and March 2016.

**Table 2-1  
Historical Indoor-Air Concentrations of Trichloroethene in Building A Basement**

Round	Location 093-A	Location 093-X	Location 138-A	Location 018-A
Round 15 August 2013	<b>13</b>	—	2.9	—
Round 16 February 2014	5.9	8.4	1.6	—
<sup>(1)</sup> Resample August 21, 2014 (093-A and 018-A only)	<b>10.6</b>	—	—	<b>10.9</b>
<sup>(1)</sup> Resample August 27, 2014 (093-A and 018-A only)	<b>9.9</b>	—	—	<b>26.2</b>
Round 17 September 2014	<b>9.2</b>	—	5.5	—
Resample October 2, 2014	<b>12.2</b>	—	—	—
Resample November 12, 2014	<b>12.1</b>	—	—	—
Round 18 February 2015	1.5	8.3	1.6	—
Round 19 August 2015	3.3	—	0.87J	—
Round 20 February 2016	6.4	—	<b>12</b>	—
Resample March 11, 2016	—	—	2.4	—

•All concentrations are in units of micrograms per cubic meter air ( $\mu\text{g}/\text{m}^3$ ).



•**Bold** type indicates that the concentration exceeds the indoor-air screening level for trichloroethene ( $8.8 \mu\text{g}/\text{m}^3$ )

<sup>(1)</sup> **A leaking fire-control water pipe under the floor of the Building A plating shop flooded the Building A basement, which triggered a shutdown of the SSD system. Therefore, supplemental IA-only sampling was performed at locations in Building A on August 21, 2014 and August 27, 2014 to evaluate whether the SSD system shutdown had possibly allowed VOCs to migrate into IA.**

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



**LEGEND**

-  STRUCTURE
-  BASEMENT LEVEL

**FIGURE 2-1**

**SITE LOCATION MAP  
BUILDING A AND BUILDING A BASEMENT**

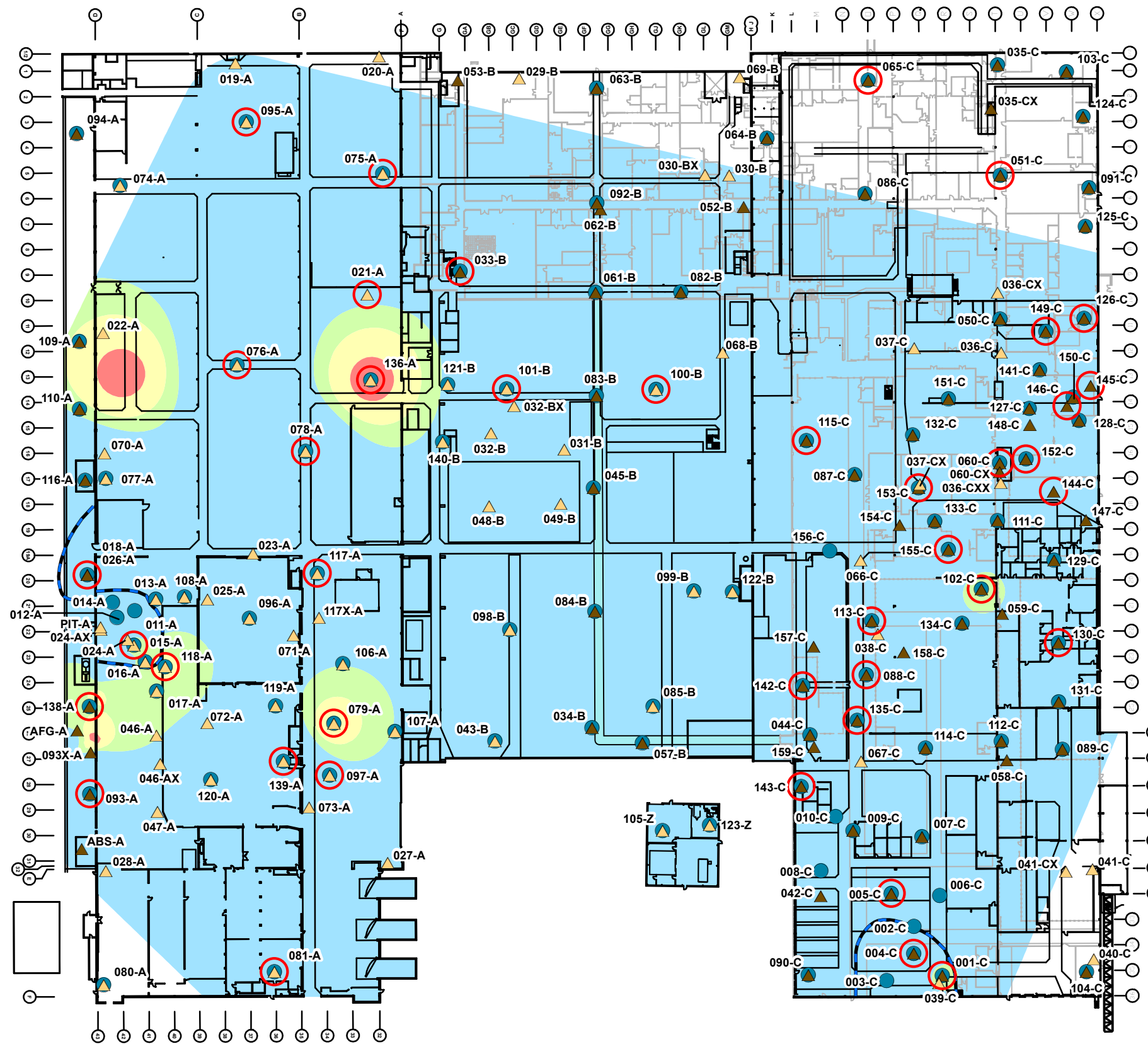
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Middle River, Maryland*

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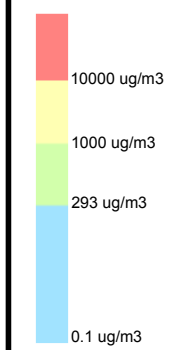




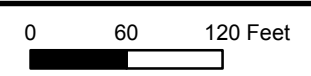
**FIGURE 2-2**  
**2016 AND 2017 INDOOR AIR AND**  
**SUB-SLAB VAPOR SAMPLING LOCATIONS**  
**FOR BUILDINGS A, B, AND C**

- LEGEND**
- Proposed Rounds 20-23 Sampling Locations
  - ▲ IAQ, 1st Floor
  - ▲ IAQ, Basement
  - SV
  - Buildings A, B and C
  - Building B and C Basement
  - SSD Radius of Influence
  - SSD Treatment Unit
  - Tunnel
- IAQ - indoor air quality  
 SV - sub-slab vapor  
 SSD - sub-slab depressurization  
 TCE - trichloroethene  
 ug/m<sup>3</sup> - micrograms per cubic meter  
 N - north  
 X - moved from original location once  
 XX - moved from original location twice

February 2016 Sub-Slab Vapor  
 TCE Concentration



**Lockheed Martin Middle River Complex**  
**Middle River, Maryland**



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## Section 3

# Investigation Approach and Methodology

This report documents additional field activities conducted in conjunction with the Round 20 (February and March 2016) indoor air quality (IAQ) and sub-slab soil-vapor (SV) sampling at the Lockheed Martin Middle River Complex (MRC) in Middle River, Maryland. This investigation was to provide additional information about possible vapor pathways in Building A and the Building A basement in Block I of the MRC, specifically with respect to possible impacts from the historical plating shop and with a focus on trichloroethene (TCE) contamination. The scope of work associated with the field investigation included: Vapor Pin™ installation and sub-slab sampling from these new vapor monitoring locations; visual inspection of possible vapor-intrusion conduits; and a portable gas chromatograph/mass spectrometer (GC/MS) chemical-identification-system survey for real-time detection of TCE. Results from this investigation will provide insight on possible vapor intrusion pathways, and possible explanations for the elevated TCE concentrations detected in recent indoor air (IA) samples from the Building A basement.

Tetra Tech, Inc. (Tetra Tech) conducted the following investigation-related field activities in March and April 2016:

- obtained site dig permit and utility clearance
- installed 10 new vapor monitoring points (VMPs) in Building A and Building A basement
- collected and chemically analyzed sub-slab-vapor samples from the 10 newly installed VMPs
- performed a visual inspection of the Building A basement, focusing on the southern end of the tunnel and the basement walls, to assess for possible vapor-intrusion pathways
- conducted a portable gas chromatograph/mass spectrometer (GC/MS) survey in Building A basement from the area near Column D18 down to the southern wall using a Frog 4000™ instrument

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### 3.1 SITE ACCESS, NOTIFICATIONS AND PERMITS

Before beginning work, Tetra Tech provided notification and coordinated access arrangements through Lockheed Martin Security, EMCOR (site maintenance), and MRA Systems, Inc, to gain access to Building A and its basement. Tenants at the MRC were informed and updated about the vapor intrusion investigation at the LMC Properties, Inc. (LMCPI) biweekly meetings. LMCPI was also notified of the tasks and schedule. Site access, utility clearance, notifications/approvals, and documentation conformed to the provisions of *Lockheed Martin's Remediation Contractor's Environment, Safety and Health (ESH) Handbook*, Revision 2, May 1, 2014 (Lockheed Martin, 2014).

Before starting any intrusive work, Tetra Tech obtained all required access agreements, clearances and permits related to the investigation, including the following:

- notified the underground utility-location center “Miss Utility” (1-800-257-7777; [www.missutility.net](http://www.missutility.net))
- notified applicable on-site parties, including Lockheed Martin Security, EMCOR Maintenance, and the tenant leads, including Middle River Aircraft Systems
- reviewed facility and site utility maps
- followed Enterprise Operation-28 and *Lockheed Martin Minimum Requirements for Intrusive Fieldwork Work Plans*, completed the “Dig Permit” (EO-28-1) and “Risk Handling Checklist” (EO-28-2), and obtained the required signatures. The activities described in this work plan were to occur on Lockheed Martin property, so signatures from the following Lockheed Martin representatives were also obtained:
  - building/facility manager
  - telecommunications
  - ESH
- identified subsurface utilities/anomalies by using a private utility-locating firm (Enviroscan, Inc.) that provided a full report documenting the utility clearance
- completed permits and the appropriate utility-clearance documentation from “Miss Utility” and the private utility-clearance contractor were submitted to Mr. Scott Lapp (EMCOR Safety) before starting any intrusive activities

Tetra Tech complied with all federal, state, and local laws, regulations, and ordinances relating to the performance of this work. No site operations were affected because work primarily occurred

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in the Building A basement, where no permanent site workers were present. One new VMP was installed on the main floor of Building A and sampled without disruption to ongoing site activities.

### **3.2 UTILITY CLEARANCE**

The VMP locations were cleared of subsurface utilities before any intrusive field activities began. This included locations beneath the main floor of Building A, beneath the floor of the Building A basement, and behind the eastern wall of the Building A basement. In addition to calling in a “Miss Utility” ticket, a private utility-locating service (Enviroscan, Inc.) marked all underground utilities and anomalies within the areas of the VMP sampling locations.

Tetra Tech followed the procedures outlined in the Corporate Staff Procedure EO-28, “Digging Projects.” Enviroscan used standard utility-locating equipment representing the best available technology. Examples of the equipment used include a Fisher TW-6 electromagnetic pipe and cable locator/tracer, a RadioDetection® cable-avoidance tool and Genny pipe and cable locator/tracer, a RadioDetection® RD4000 multi-frequency pipe and cable tracer, and a Geophysical Survey Systems, Inc. (GSSI) subsurface-interface radar system (GSSI SIR 2000) ground-penetrating radar. Utilities located were marked on the ground and the wall with the appropriate paint color corresponding to each unique utility. In high traffic areas adjacent to active workstations, such as the Building A main floor, utilities were not marked on the ground with paint. Alternate methods of recording the utility clearance (e.g., using removable tape, recording utility and VMP locations in the site logbook) were used.

Standard utility-locating methods are not sufficiently effective because subsurface metal (rebar) and voids below the floor and behind the wall are present, or because large pieces of equipment and stored metal materials were present. In these cases, alternative methods (e.g., line tracing) were used to effectively identify and mark any utilities. Boring locations were offset based on the results of the subsurface utility survey. Because several proposed VMPs are to be on the eastern wall of the Building A basement, EMCOR was also consulted to provide utility locations behind the wall, including air ducts and utility corridors.

### **3.3 PERMANENT SUB-SLAB-VAPOR MONITORING-POINT INSTALLATION**

Before VMP installation, appropriate procedures were followed to address the possible presence of asbestos-containing materials (ACM). An outside contractor, licensed in Maryland to manage

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all aspects of asbestos, was consulted before any intrusive work began. No ACM was present at any of the 10 new sampling locations; therefore, no abatement was necessary.

Ten new VMPs were installed in Building A and the Building A basement (Figure 3-1) on March 14, 2016 through March 16, 2016. VMP locations were strategically located near possible TCE sources, including a former underground storage tank (UST) and vapor degreasers associated with former plating shop operations. The locations of the 10 VMPs follow:

- VMP 168-A is on the main floor of Building A.
- VMPs 174-A and 175-A are in the Building A basement floor.
- VMPs 169-A, 170-A, 171-A, 172-A, 173-A, 176-A and 177-A are on the eastern wall of Building A basement.

Two VMP locations were adjusted from their original proposed location in the field. The original location for SV-171-A was on the main floor of Building A in the expanded bond layup room (former plating shop). However, the field team noticed that another sampling point was already installed in that location, so it was relocated farther down the eastern wall of the basement. The original location for SV-175-A was in the eastern wall of the Building A basement; however, the field team observed a large void space behind the wall, and the concrete wall in the adjacent area was too thick to accommodate the sampling point. SV-175-A was relocated and installed in the basement floor adjacent to its original proposed location on the wall.

Vapor Pins™ were installed at each location. This technology was developed by Cox Colvin and Associates as an alternative to the traditional monitoring point and subsurface vault. Installation requires only a small diameter hole (1½-inch-diameter by 1¾-inch-deep), as compared to the larger (six-inch-diameter) core needed for a more traditional VMP design. A standard hammer drill was used for the Vapor Pin™ installation. A silicone sleeve was placed around each stainless steel Vapor Pin™ before installation. The Vapor Pins™ are self-sealing, and include a silicone sleeve that provides an airtight seal allowing the sub-slab air to be sampled without ambient air intrusion. Each VMP location was surface-completed with a stainless steel flush-mounted cover. Dust generated during the hammer drilling was collected and contained using a standard Shop-Vac®. The collected concrete dust was bagged and disposed of in the facility's solid-waste stream.

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## **3.4 SUB-SLAB SAMPLING AND ANALYSIS**

An SV sample was collected from each of the 10 new Vapor Pin™ sampling locations on April 1, 2016. Each sample was collected over a one-hour period using pre-conditioned Summa® canisters. Samples were collected using protocols identified in USEPA Method Toxic Organic-15 (TO-15), and analyzed for volatile organic compounds (VOCs) (USEPA, 1999). Sub-slab soil-vapor samples were collected in accordance with standard operating procedures developed by the USEPA Environmental Response Team for soil-vapor sampling (USEPA, 1996), and methodologies developed by the USEPA Office of Research and Development (USEPA, 2004).

After sampling was complete, each canister was closed and sent to an off-site laboratory (TestAmerica, Inc., Knoxville, Tennessee) under proper chain of custody procedures. Each sample was submitted for analysis by USEPA Method TO-15. The current version of the analytical parameter list for indoor-air, sub-slab vapor, and background monitoring was agreed upon by the team in 2013, and is presented in Section 3.4.2. Following receipt of the analytical data, the data were validated by an independent chemist in accordance with USEPA Region 3 protocols. All data were validated for all quality assurance (QA)/quality control (QC) parameters, including accuracy, precision, completeness, and comparability, in accordance with USEPA guidance.

### **3.4.1 Collection of Sub-Slab-Vapor Samples**

SV was sampled in conjunction with the winter (February/March) 2016 indoor-air quality (IAQ) and sub-slab soil-vapor (SV) sampling. In accordance with USEPA Method TO-15, individual, specially treated, stainless steel, evacuated Summa® canisters were used to collect all SV samples. The one-liter (1L) Summa® canisters were equipped with in-line particulate filters and integral controllers to set the fill rate during sampling.

Soil vapor samples were collected through Teflon® tubing attached to the stainless steel Vapor Pins™. Before sampling, the Teflon® tubing was purged of atmospheric air to allow any subsurface vapor to enter the probe and tubing. Purging was performed by attaching the Teflon® sample tubing to a low-flow sampling pump set at a flow rate of approximately 200 cubic centimeters per minute (or lower) to minimize the possible mobilization of subsurface vapor, thus biasing the sample. One to three volumes (i.e., the volume of the sample probe and tube) were purged to ensure that collected samples were representative of sub-slab conditions.

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Sampling was not performed any sooner than 20 minutes following purging, to allow subsurface conditions to equilibrate. Samples were collected by opening the valve on the canister and allowing outside air to enter the canister at the rate set by the controller. The controllers were calibrated in the laboratory and shipped to the field with a sufficient flow rate to maintain the necessary vacuum pressure in the canister for the one-hour sampling interval. Summa<sup>®</sup> canisters were certified clean (less than 0.2 parts per billion [ppb] by volume of targeted compounds) by the laboratory before sending, in accordance with Section 8.4 of the TO-15 methodology (USEPA, 1999).

Small industrial heat fans were operating in the basement, and small windows along the top of the west wall of the basement were partially open during sampling. The outside temperature during sampling was approximately 65 degrees Fahrenheit and the barometric pressure was 26.67 inches, with overcast skies. Winds averaged approximately 12 miles per hour and were out of the south/southeast. The Building A sub-slab-depressurization system (SSDS) was shut down 24 hours before sampling began. The air-filtration units operating continuously in Building A basement remained in operation throughout sampling. Each sampling location was routinely inspected during the sampling period to ensure appropriate operation of the sampling devices, sample integrity, and to document conditions within the sampled area that might affect results.

### **3.4.2 Sample Analysis**

Tetra Tech's *Site Characterization Report* (Tetra Tech, 2006) identifies specific compounds considered primary contributing factors for possible risk at MRC via a vapor-intrusion exposure scenario. The target compounds identified in groundwater and sub-slab-vapor samples may have been used and released historically at the MRC, and could possibly affect IA via subsurface migration. All collected samples were submitted for laboratory analysis using gas chromatography/mass spectroscopy (GC/MS) with cryogenic concentration, as described in Sections 9 and 10 of USEPA Method TO-15 (USEPA, 1999). This method was used because of its low detection limit (in the parts per billion by volume range), and because of the VOCs it can analyze for. All SV samples collected during this investigation were analyzed for the following contaminants of concern:

- benzene
- carbon tetrachloride
- chlorodifluoromethane (Freon 22)
- naphthalene
- tetrachloroethene (PCE)
- toluene

- chloroform
- dichlorodifluoromethane
- 1,1-dichloroethane (1,1-DCA)
- 1,2-dichloroethane (1,2-DCA)
- 1,1-dichloroethene (1,1-DCE)
- *cis*-1,2-dichloroethene (*cis*-1,2-DCE)
- *trans*-1,2-dichloroethene (*trans*-1,2-DCE)
- ethylbenzene
- methyl-tertiary-butyl ether (MTBE)
- methylene chloride
- 1,2,4-trichlorobenzene
- 1,1,1-trichloroethane (1,1,1-TCA)
- 1,2,3-trimethylbenzene (1,2,3-TMB)
- 1,2,4-trimethylbenzene (1,2,4-TMB)
- 1,3,5-trimethylbenzene (1,3,5-TMB)
- trichloroethene (TCE)
- 1,1,2-trichloroethane (1,1,2-TCA)
- vinyl chloride (VC)
- xylenes (total)

Method TO-15 reporting limits for targeted VOCs typically range from 0.2–0.5 ppb, depending on the laboratory and equipment used. All samples were submitted to a laboratory having the appropriate certification to perform TO-15 analyses. Summa<sup>®</sup> canisters used for sample collection were shipped and stored at ambient temperatures. All appropriate chain-of-custody documentation was completed for each sample. One duplicate sample (SV-DUP-A for SV-174-A) was collected for QC purposes.

### 3.5 VISUAL INSPECTION AND PORTABLE GAS CHROMATOGRAPH/MASS SPECTROMETER SURVEY

In conjunction with Round 20 (February 2016) IAQ and SV sampling, Tetra Tech also made a visual inspection of the Building A basement, focusing on the southern end of the basement and the basement walls to assess possible vapor-intrusion pathways. Any cracks or openings in floors or walls (e.g., sumps, drains, or pipes) were noted as possible vapor-intrusion pathways and were investigated. Subsequent to the visual inspection, Tetra Tech surveyed these areas (Figure 3-1) using a portable gas chromatograph/mass spectrometer (GC/MS) calibrated to detect TCE. The field-portable GC/MS (Frog 4000<sup>™</sup>) is particularly useful in locating indoor sources of VOCs, so it was used to identify sub-slab-vapor conduits as well. This screening approach provided greater flexibility than deploying individual Summa<sup>®</sup> canisters to locate possible TCE sources.

The field-portable GC/MS analysis was limited to detecting TCE. The instrument was calibrated to identify an ion specifically characteristic of TCE, thus removing any interference from other VOCs. Each sample required approximately seven to 10 minutes to collect. Forty-two samples

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(Log 955 through Log 996) were collected from various floor and wall features in the Building A basement. Log sheets for the portable GC/MS survey are in Appendix B. A photographic log of the portable GC/MS survey is in Appendix C. The photographic log includes photos of floor features sampled during the survey, and a photograph of the Frog 4000™ portable GC/MS unit.

### **3.6 WASTE MANAGEMENT**

Investigation-derived waste (IDW) generated during the vapor intrusion investigation consisted solely of personal protective equipment (PPE) and concrete dust. The PPE IDW was brushed off, placed in trash bags, and disposed of in a facility trash receptacle designated by Lockheed Martin personnel. The concrete dust was bagged and disposed of in the facility solid-waste stream.

### **3.7 DATA MANAGEMENT**

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

#### **3.7.1 Data Tracking and Control**

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

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



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### **3.7.2 Sampling Information**

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

### **3.7.3 Project Data Compilation**

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

### **3.7.4 Geographical Information System**

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

## **3.8 DATA REVIEW**

Data from the laboratory were entered into a sample database and evaluated against risk-based criteria. Data validation (evaluating data completeness, holding times, calibrations, precision, accuracy, laboratory- and field-blank contamination, and detection limits) was completed by the Tetra Tech chemical-data-validation group in Pittsburgh, Pennsylvania concurrent with the data evaluation. These reviews are based on the *USEPA Region III Modifications to the National Functional Guidelines for Data Review* (USEPA, 1993 and 1994) and the specifics of the analytical methods used.

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Data from this sampling event consist of air-sample chemical results. Data-validation reports and COC are in Appendix D as PDF files on compact disc. The data were validated as acceptable for their intended uses (i.e., risk screening and risk assessment), except for data that were qualified as unreliable (UR flag). For this data validation, the following data qualifiers (i.e., flags) were applied to the chemical results presented in this report:

- J* The analyte is considered present in the sample. However, the value is estimated and may not be accurate or precise. In this program, samples were qualified with “*J*” because quantitation was above the method detection limit but below the laboratory reporting-limit.
- U* The analyte is not detected at the detection limit left of the letter.
- UJ* The analyte is not detected; however, the quantitation or detection limit may be inaccurate or imprecise.

The data qualifiers above appear in the chemical results tables and figures in Section 4 and in Appendix D.

**Table 3-1  
Vapor-Monitoring-Point Sampling, Chemical Analysis, and Rationale,  
Building A and Building A Basement,  
Middle River Complex, Middle River, Maryland**

Vapor-monitoring-point number	Vapor-monitoring-point location	Sample analysis (laboratory method)	Rationale/purpose
SV-168-A	Main floor of Building A, in line with Column #13	VOCs (TO-15)	To assess sub-slab conditions near the former location of a TCE-vapor degreaser
SV-169-A SV-170-A SV-171-A <sup>(1)</sup> SV-172-A SV-173-A SV-176-A SV-177-A	Eastern wall of Building A basement	VOCs (TO-15)	To assess conditions behind the eastern wall of Building A basement for possible sources of TCE contamination (from the UST and vapor degreaser) associated with the former plating shop operations
<i><sup>(1)</sup>Installation of SV-171-A was originally planned for the expanded bond layup room (former plating shop) on the main floor of Building A. However, another sampling point was already installed in that location, so it was relocated farther down on the eastern wall of the Building A basement.</i>			
SV-174-A SV-175-A <sup>(2)</sup>	Building A basement floor	VOCs (TO-15)	To assess sub-slab conditions near a floor grate that showed elevated detections of TCE during a previous portable GC/MS survey
<i><sup>(2)</sup>Initial plans were to install SV-175-A in the eastern wall of Building A basement. However, a large void space was discovered behind the wall, and the concrete wall in the adjacent area was too thick to accommodate the sampling point. SV-175-A was relocated and installed in the floor of the basement, adjacent to its original proposed location on the wall.</i>			

GC/MS—gas chromatograph/mass spectrometer

SV—soil vapor

TCE—trichloroethene

TO—toxic organic (method)

UST—underground storage tank

VOCs—volatile organic compounds

FIGURE 3-1

TCE RESULTS DETECTED DURING SUB-SLAB SAMPLING AND PORTABLE GC/MS SURVEY, BUILDING A AND BUILDING A BASEMENT

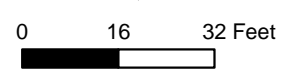
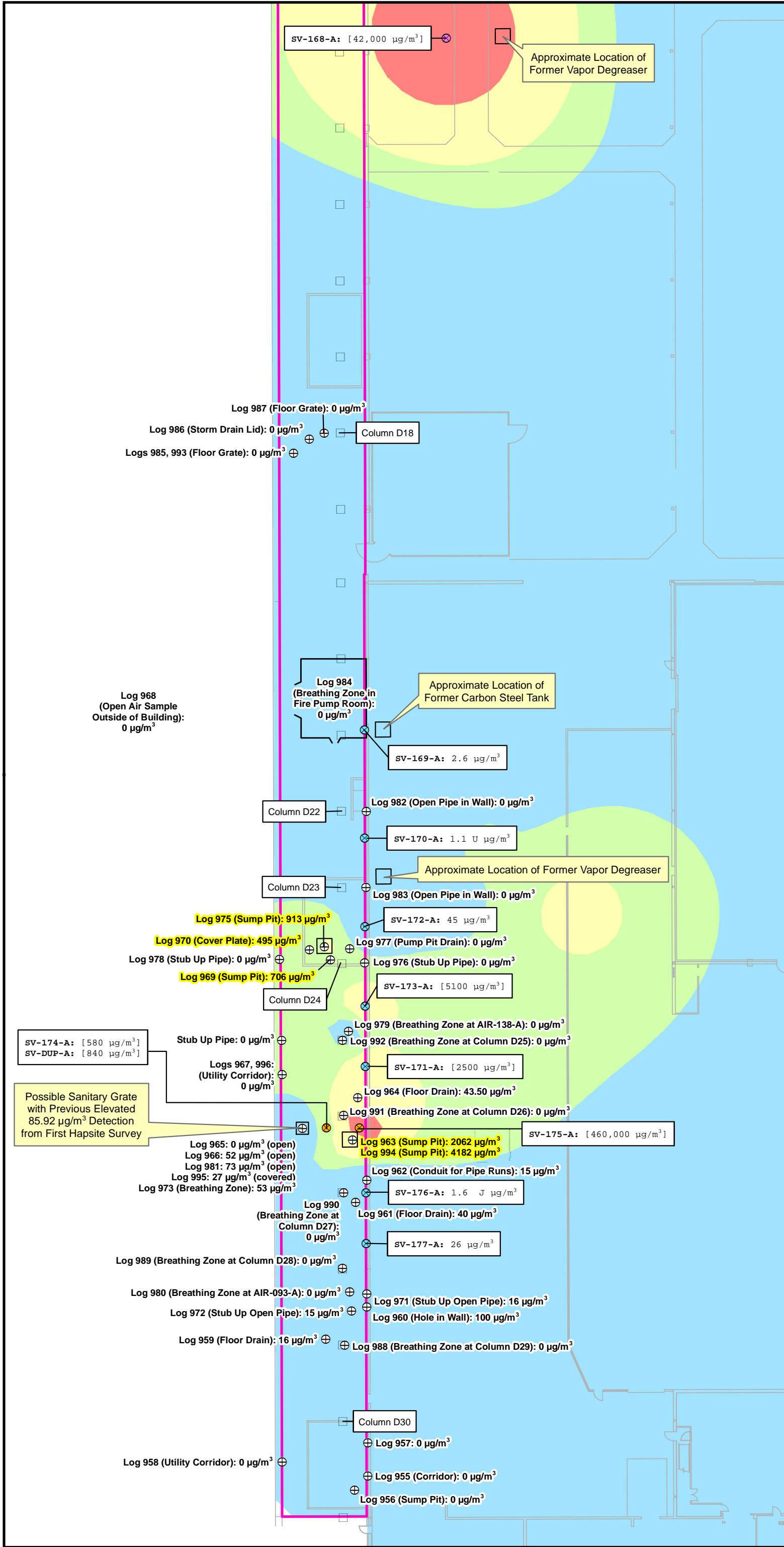
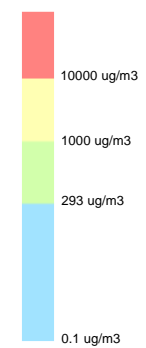
Legend

- TCE Sampling Results (values higher than screening values shown with brackets)
- [580]
- VMPs on Building A Main Floor
- VMPs through Building A Basement Wall
- VMPs through Building A Basement Floor
- Frog 4000™ Sample Location
- Building A Basement
- Basement Support Column
- Ground Floor Layout
- IA Indoor Air
- SV Soil Vapor
- TCE trichloroethene
- µg/m³ micrograms per cubic meter
- VMP vapor monitoring point estimated value

Samples highlighted in yellow indicate highest Frog 4000™ TCE detections.

**TCE Screening Levels**  
 IA 8.8 µg/m³  
 SV 290 µg/m³

February 2016 Sub-Slab Vapor TCE Concentration



Lockheed Martin Middle River Complex  
 Middle River, Maryland

DATE MODIFIED: 06/24/16  
 CREATED BY: JEE



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## Section 4

# Results

All analytical results for indoor-air-quality (IAQ) samples were compared to screening levels for industrial air; these levels are based on United States Environmental Protection Agency (USEPA) *Regional Screening Levels for Chemical Contaminants at Superfund Sites* (USEPA, 2015a). Screening the chemicals of concern uses the lower of the carcinogenic (*c*) or noncarcinogenic (*nc*) values. Carcinogenic values are based on a  $1 \times 10^{-5}$  (i.e., a one-in-100,000 probability) excess cancer-risk, whereas the noncarcinogenic values are based on a hazard quotient of 1 (i.e., the no-adverse-effect level). These risk benchmarks were selected in accordance with Maryland Department of the Environment (MDE) requirements.

Sub-slab-vapor (SV) sampling results were compared to SV screening values derived in accordance with the methods discussed in Appendix D of USEPA guidance for evaluating vapor intrusion (USEPA, 2002), and were calculated by dividing indoor air (IA) screening levels by a conservative attenuation factor (AF) of 0.03. The attenuation factor represents the adjustment applied to IA screening levels to account for concentration reductions due to diffusive, advective, and/or other attenuating mechanisms as vapor migrates from the sub-slab to indoor air. Simply stated, SV is expected to dilute upon movement into IA; the AF is the ratio of the IA concentration to its SV concentration, under a conservative vapor-intrusion (VI) scenario. The most recent USEPA guidance (USEPA, 2015b) confirms that an AF of 0.03 is appropriate; this value results in higher SV screening values as compared to those used for sampling rounds before August 2012, when an earlier USEPA AF of 0.1 was used.

### 4.1 SUB-SLAB-SAMPLING DATA ANALYSIS

Table 4-1 presents the Building A basement SV results collected from the new VMP locations, with trichloroethene (TCE) SV concentrations detected at these sampling locations displayed in Figure 3-1. Location SV-175-A, on the Building A basement floor, had the highest TCE concentration (460,000 micrograms per cubic meter air [ $\mu\text{g}/\text{m}^3$ ]). This concentration is orders of magnitude higher than its screening level ( $293 \mu\text{g}/\text{m}^3$ ). 1,1-Dichloroethane ( $3,600 \mu\text{g}/\text{m}^3$ ) also

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exceeded its screening level ( $2,567 \mu\text{g}/\text{m}^3$ ) at this location. SV TCE exceedances were observed in the duplicate samples collected from location SV-174-A ( $580$  and  $840 \mu\text{g}/\text{m}^3$ ), and in a sample collected from the Building A basement floor, near a floor grate that exhibited elevated TCE concentrations during a previous IA survey conducted using a gas chromatograph/mass spectrometer (GC/MS). An SV TCE exceedance also occurred at location SV-168-A ( $42,000 \mu\text{g}/\text{m}^3$ ), on the Building A main floor near the former location of a TCE-vapor degreaser. Chloroform ( $290 \mu\text{g}/\text{m}^3$ ) also exceeded its screening level ( $177 \mu\text{g}/\text{m}^3$ ) at this location. SV TCE exceedances also occurred at two locations (SV-171-A and SV-173-A) on the eastern wall of Building A basement.

## **4.2 PORTABLE GC/MS SURVEY DATA ANALYSIS**

Table 4-2 presents Building A basement IA results collected using a Frog 4000™ field-portable GC/MS instrument, which provides real-time analysis of TCE in indoor air. (Analysis using this instrument was limited to TCE detection.) Figure 3-1 illustrates TCE concentrations in samples collected using this portable field instrument. The highest concentrations of IA TCE ( $2,062$  and  $4,182 \mu\text{g}/\text{m}^3$ ) were from replicate samples collected at the large sump located east of Column D26. This sump is near the floor grate where an elevated concentration of TCE ( $87 \mu\text{g}/\text{m}^3$ ) was detected during the first field-portable GC/MS instrument survey (INFICON HAPSITE®) in February 2014. IA TCE concentrations collected from the south-central portion of the Building A basement and immediately south of Column D26, near the previously mentioned floor grate, also exceeded the screening level. One of these exceedances was collected from the breathing zone, while the other exceedances were collected at floor level.

IA TCE concentrations collected from three floor drains near Column D24 also exceeded the screening level. IA TCE concentrations collected from a floor drain and open conduit for pipe runs near column D27, and from two stub-up open pipes, a floor drain, and a hole in the wall of the basement between columns D28 and D29, also exceeded the screening level. None of these exceedances was collected from the breathing zone. No TCE was detected in breathing zone samples collected from columns D25 through D29.

TABLE 4-1

**SUB-SLAB VAPOR SAMPLING RESULTS, BUILDING A AND BUILDING A BASEMENT  
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND  
PAGE 1 OF 3**

LOCATION SAMPLE ID SAMPLE DATE	Target Shallow Soil Gas Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>(1)</sup>		SV-168-A	SV-169-A	SV-170-A	SV-171-A	SV-172-A	SV-173-A
			SV-168-A 20160401	SV-169-A 20160401	SV-170-A 20160401	SV-171-A 20160401	SV-172-A 20160401	SV-173-A 20160401
<b>Volatile organic compounds (<math>\mu\text{g}/\text{m}^3</math>)</b>								
I,1,1-TRICHLOROETHANE	733333	nc	180 J	0.78 U	0.33 U	5.7 U	0.65 U	4.4 U
I,1,2-TRICHLOROETHANE	29	nc	140 U	1.4 U	0.57 U	9.9 U	1.1 U	7.8 U
I,1-DICHLOROETHANE	2567	ca	180 J	0.48 U	0.2 U	22 J	0.4 U	42
I,1-DICHLOROETHENE	29333	ca	16000	0.98 J	0.28 U	700	2.3 J	1100
I,2,3-TRIMETHYLBENZENE	733	nc	210 U	2 U	0.84 U	14 U	1.7 U	11 U
I,2,4-TRICHLOROBENZENE	293	nc	370 UJ	3.4 U	1.4 UJ	25 UJ	2.9 UJ	20 U
I,2,4-TRIMETHYLBENZENE	1033	nc	160 U	3.6 J	0.61 U	11 U	2.6 J	8.3 U
I,2-DICHLOROETHANE	29333	nc	97 U	0.92 U	0.38 U	6.7 U	0.77 U	5.2 U
I,3,5-TRIMETHYLBENZENE	733	nc <sup>(2)</sup>	160 U	1.5 U	0.64 U	11 U	1.3 U	8.7 U
BENZENE	533	ca	93 U	1.4 J	0.37 U	6.4 U	0.8 J	5 U
CARBON TETRACHLORIDE	667	ca	120 U	1.1 U	0.47 U	8.2 U	0.94 U	6.4 U
CHLORODIFLUOROMETHANE	7333333	nc	67 U	1.6 J	2	4.6 U	1.9 J	3.6 U
CHLOROFORM	177	ca	<b>290 J</b>	1.2 J	0.71 J	12 J	1.4 J	14 J
CIS-1,2-DICHLOROETHENE	--	--	520	1.1 U	0.48 U	100	2.7 J	170
DICHLORODIFLUOROMETHANE	14667	nc	170 U	2.1 J	2.1	12 U	2.8 J	9.1 U
ETHYLBENZENE	1633	ca	150 U	3.9 J	0.59 U	10 U	3.5	7.9 U
METHYL TERT-BUTYL ETHER	15667	ca	310 U	2.9 U	1.2 U	21 U	2.5 U	17 U
METHYLENE CHLORIDE	86667	nc	570 U	5.4 U	2.7 J	39 U	4.5 U	31 U
NAPHTHALENE	120	ca	270 U	2.5 U	1.2	18 U	2.1 U	14 U
TETRACHLOROETHENE	6000	nc	140 U	1.3 U	0.54 U	9.4 U	1.1 U	7.4 U
TOLUENE	733333	nc	570 U	20	2.3 U	39 U	16	31 U
TOTAL XYLENES	14667	nc	130 U	23	0.52 U	9 U	20	8.3 J
TRANS-1,2-DICHLOROETHENE	--	--	100 U	0.94 U	0.4 U	6.9 U	0.79 U	7.7 J
TRICHLOROETHENE	293	nc	<b>42000</b>	2.6	0.38 U	<b>2500</b>	45	<b>5100</b>
VINYL CHLORIDE	933	ca	94 U	0.88 U	0.37 U	6.4 U	0.74 U	5 U

TABLE 4-1

SUB-SLAB VAPOR SAMPLING RESULTS, BUILDING A AND BUILDING A BASEMENT  
 LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND  
 PAGE 2 OF 3

LOCATION SAMPLE ID SAMPLE DATE	Target Shallow Soil Gas Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>(1)</sup>		SV-174-A	SV-174-A	SV-174-A	SV-175-A	SV-176-A	SV-177-A
			SV-174-A	SV-174-A-	SV-174-A-D	SV-175-A	SV-176-A	SV-177-A
			20160401	20160401	20160401	20160401	20160401	20160401
<b>Volatile organic compounds (<math>\mu\text{g}/\text{m}^3</math>)</b>								
I,1,1-TRICHLOROETHANE	733333	nc	30	33	36	320 J	0.33 U	0.33 U
I,1,2-TRICHLOROETHANE	29	nc	2.9 U	4.05 U	5.2 U	360 U	0.57 U	0.57 U
I,1-DICHLOROETHANE	2567	ca	8.3	8.85	9.4 J	<b>3600</b>	0.2 U	0.2 U
I,1-DICHLOROETHENE	29333	ca	55	63	71	29000	0.36 J	0.28 U
I,2,3-TRIMETHYLBENZENE	733	nc	4.2 U	5.9 U	7.6 U	530 U	0.87 J	0.84 U
I,2,4-TRICHLOROBENZENE	293	nc	7.2 UJ	10.1 U	13 UJ	910 UJ	1.4 UJ	1.4 UJ
I,2,4-TRIMETHYLBENZENE	1033	nc	3.1 U	4.35 U	5.6 U	390 U	2.5	0.88 J
I,2-DICHLOROETHANE	29333	nc	1.9 U	2.7 U	3.5 U	240 U	0.38 U	0.38 U
I,3,5-TRIMETHYLBENZENE	733	nc <sup>(2)</sup>	3.2 U	4.5 U	5.8 U	400 U	0.88 J	0.64 U
BENZENE	533	ca	1.8 U	2.55 U	3.3 U	230 U	1 J	0.88 J
CARBON TETRACHLORIDE	667	ca	2.4 U	3.35 U	4.3 U	300 U	0.47 U	0.47 U
CHLORODIFLUOROMETHANE	7333333	nc	1.5 J	1.5 J	2.4 U	170 U	7.3	3.7
CHLOROFORM	177	ca	9.6	10.3	11 J	230 U	0.37 U	2
CIS-1,2-DICHLOROETHENE	--	--	26	28.5	31	18000	0.48 U	0.48 U
DICHLORODIFLUOROMETHANE	14667	nc	3.3 U	4.7 U	6.1 U	420 U	2.2	1.9 J
ETHYLBENZENE	1633	ca	2.9 U	4.1 U	5.3 U	370 U	4	1.6 J
METHYL TERT-BUTYL ETHER	15667	ca	6.1 U	8.55 U	11 U	770 U	1.2 U	1.2 U
METHYLENE CHLORIDE	86667	nc	11 U	16 U	21 U	1400 U	2.3 U	3.9
NAPHTHALENE	120	ca	5.2 U	7.35 U	9.5 U	660 U	1 U	1 U
TETRACHLOROETHENE	6000	nc	2.7 U	3.8 U	4.9 U	340 U	0.69 J	0.54 U
TOLUENE	733333	nc	11 U	16 U	21 U	1400 U	16	7.1
TOTAL XYLENES	14667	nc	2.6 U	3.65 U	4.7 U	330 U	25	11
TRANS-1,2-DICHLOROETHENE	--	--	2 U	2.8 U	3.6 U	1900	0.4 U	0.4 U
TRICHLOROETHENE	293	nc	<b>580</b>	<b>710</b>	<b>840</b>	<b>460000</b>	1.6 J	26
VINYL CHLORIDE	933	ca	1.9 U	2.65 U	3.4 U	230 U	0.37 U	0.37 U



TABLE 4-1

SUB-SLAB VAPOR SAMPLING RESULTS, BUILDING A AND BUILDING A BASEMENT  
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND  
PAGE 3 OF 3

Notes: All sample concentrations are in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )

Shaded cells indicate a concentration greater than risk-based screening level

$\mu\text{g}/\text{m}^3$  = micrograms per cubic meter

-- = not available

J = estimated value

U = nondetect

UJ = non-detected value is estimated

ca = screening value based on carcinogenic effects

nc = screening value based on noncarcinogenic effects

(1) Screening values derived in accordance with Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (November 2002). Screening values are equal to United States Environmental Protection Agency (USEPA) Industrial Air Screening Values divided by an attenuation factor of 0.03, and correspond to a target cancer risk level of 1.0E-05.

(2) Value is for 1,2,3-trimethylbenzene.

TABLE 4-2

**PORTABLE GC/MS SURVEY RESULTS, BUILDING A BASEMENT  
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND**

Sample ID	Date	TCE reading (ppb)	TCE reading ( $\mu\text{g}/\text{m}^3$ )	Sample Location in Building A Basement
Log 955	3/22/2016	0	0	Southeastern portion of basement just outside entry to permit confined space heat duct corridor in east wall
Log 956	3/22/2016	0	0	Southeastern portion of basement in sump pit associated with previous air-handler unit
Log 957	3/22/2016	0	0	Open pipe conduit in eastern wall of basement toward ceiling
Log 958	3/22/2016	0	0	Utility corridor in west wall in southwestern portion of basement
Log 959	3/22/2016	3	16	Floor drain by Column D29, approximately 12 feet south of sub-slab sample location 093-A
Log 960	3/22/2016	19	100	Hole in east wall of basement just north of Column D29
Log 961	3/22/2016	7	40	Large circular perforated floor drain east of Column D27, within concrete bermed area that previously contained industrial car wash water tanks and industrial water plating line tanks
Log 962	3/22/2016	3	15	Conduit for pipe runs in eastern wall of basement east of Column D27
Log 963	3/22/2016	384	2062	Large sump pit in floor, east of Column D26
Log 964	3/22/2016	8	44	Small floor drain just northeast of Column D26
Log 965	3/22/2016	0	0	Floor grate west of Column D26 (location of previous elevated TCE level of 16ppm during original portable GC/MS HAPSITE™ survey)
Log 966	3/22/2016	10	52	Replicate sample of Log 965 to obtain additional reading at location that showed previous elevated TCE levels.
Log 967	3/22/2016	0	0	Utility corridor in western wall of basement, west of Column D25
Log 968	3/22/2016	0	0	Open air sample collected outside of Building A Basement in ambient air (background type sample)
Log 969	3/22/2016	132	706	Covered floor drain just northwest of Column D24
Log 970	3/22/2016	92	495	Large cover plate approximately 12 feet northwest of Column D24
Log 971	3/22/2016	3	16	Open stub up pipe coming up out of floor against eastern wall of basement, between Columns D28 and D29
Log 972	3/22/2016	3	15	Open stub up pipe just west of Log 971 sample location, adjacent to newly installed evaporator unit
Log 973	3/22/2016	10	53	Breathing zone sample collected from Log 965 sample location (floor grate west of Column D26) with cover on floor grate
Log 974	3/22/2016	0	0	Short stub up pipe against base of western wall coming out of floor west of Column D25
Log 975	3/23/2016	170	913	Sump pit with round cover plate with 1/6 of cover plate open to air, about 13 feet northwest of Column D24 and adjacent to sample locations Log 969 and Log 970+E42
Log 976	3/23/2016	0	0	Short stub up pipe coming out of floor against the east wall of the basement east of Column D24
Log 977	3/23/2016	0	0	Covered drain down in sump pit located about 12 feet northeast of Column D24
Log 978	3/23/2016	0	0	Open pipe coming out of floor west of sample location Log 970 against west wall of basement
Log 979	3/23/2016	0	0	Breathing zone sample collected above sub-slab sample location 138-A
Log 980	3/23/2016	0	0	Breathing zone sample collected above sub-slab sample location 093-A
Log 981	3/23/2016	14	73	Replicate sample of Log 965 to obtain additional reading at location that showed previous elevated TCE levels.
Log 982	3/23/2016	0	0	Large open pipe coming out of east wall of basement located at bottom of stairwell directly east of Column D22
Log 983	3/23/2016	0	0	Small hole in eastern wall of basement under stairwell east of Column D23.
Log 984	3/23/2016	0	0	Breathing zone sample collected in fire pump room
Log 985	3/23/2016	0	0	Floor drain north of fire pump room-probable sanitary lid with perforated holes and no cover
Log 986	3/23/2016	0	0	Storm drain lid west of Column D18
Log 987	3/23/2016	0	0	Perforated circular floor grate just north/northeast of sample location Log 986
Log 988	3/24/2016	0	0	Breathing zone sample at Column D29
Log 989	3/24/2016	0	0	Breathing zone sample at Column D28
Log 990	3/24/2016	0	0	Breathing zone sample at Column D27
Log 991	3/24/2016	0	0	Breathing zone sample at Column D26
Log 992	3/24/2016	0	0	Breathing zone sample at Column D25
Log 993	3/24/2016	0	0	Replicate of sample Log 986 (storm drain lid west of Column D18)
Log 994	3/24/2016	779	4182	Replicate of sample Log 963 (large sump pit in floor east of Column D26)
Log 995	3/24/2016	5	27	Replicate sample of Log 965 collected with cover on grate, to obtain additional reading at location that showed previous elevated TCE levels
Log 996	3/24/2016	0	0	Replicate of sample Log 967 (utility corridor in western wall of basement, west of Column D25)

**Abbreviations:**

$\mu\text{g}/\text{m}^3$  - micrograms per cubic meter air  
GC/MS - gas chromatography/mass spectrometer  
ppm - parts per million  
TCE - trichloroethene

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## Section 5

# Conclusions and Recommendations

### 5.1 CONCLUSIONS

Tetra Tech, Inc. (Tetra Tech) has conducted a vapor intrusion investigation of Building A and the Building A basement in Tax Block I at the Middle River Complex (MRC) (owned by LMC Properties, Inc.) in Middle River, Maryland. This investigation sought to evaluate whether volatile organic compounds (VOCs) in sub-slab vapor associated with soil and groundwater chemicals of concern at the site might be moving into indoor air (IA) at the Middle River Complex facilities. The data set is comprised of indoor air and sub-slab-vapor (SV) samples collected in March and April 2016. All data were validated to ensure compliance with analytical method requirements. Indoor air quality (IAQ) data were compared to risk-based screening levels for industrial air set at the  $1 \times 10^{-5}$  (i.e., one-in-100,000 probability) risk level for carcinogens and at a hazard quotient of 1 for noncarcinogens (as published in the United States Environmental Protection Agency [USEPA] *Regional Screening Levels for Chemical Contaminants at Superfund Sites* [USEPA, 2016]). Sub-slab-vapor (SV) data were compared to screening values derived using methods described in *Draft Guidance for Evaluating the Vapor-Intrusion to Indoor-Air Pathway from Groundwater and Soils* [USEPA, 2015), by applying an attenuation factor of 0.03 to the indoor-air screening-values.

Trichloroethene (TCE) has been a prevalent contaminant of concern in indoor air in Building A. Trichloroethene was detected above its screening level in indoor air in the Building A basement during the most recent semiannual round of sampling (February 2016). Historically, trichloroethene in indoor air has exceeded its screening level at location 093-A in the Building A basement. Indoor air exceedances of trichloroethene at location 093-A occurred during Round 15 (August 2013) and Round 17 (September 2014). While IA air samples were below screening levels during Round 16 (February 2014), a trichloroethene concentration of 87 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) was measured above a nearby floor grate using the hand-held *hazardous air*

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*pollutants on-site* (HAPSITE®) field instrument. (For comparison, laboratory-analyzed concentrations of trichloroethene were 5.9 µg/m<sup>3</sup> and 8.4 µg/m<sup>3</sup> at locations 093-A and 093X-A, respectively, during conventional sampling in Round 16). (See Figure 2-2 for all historical and current VMP locations.) Trichloroethene exceedances were observed in all samples collected from 093-A during Round 17 (in August, September, and October 2014), with little variability. The floor grate may serve as a preferential vapor-intrusion pathway to this part of Building A.

Additional information about the underground network in Building A basement was obtained during a recent interview with EMCOR, the on-site maintenance contractor. Many of the floor features, including various sumps and drains, were historically used to manage groundwater infiltration. Sumps collected infiltrating groundwater and pumped it out of the basement. Several large sumps were used to prevent water intrusion into large air handlers that previously sat directly on top of the sumps.

These air handlers pumped air through large-diameter heat tunnels and corridors in the Building A basement's eastern wall; these tunnels extend back under the main floor of Building A. These sumps may also connect to pipes that carry air to other parts of the building. This network may provide a preferential pathway for transfer of contaminants into indoor air. Groundwater in the basement sumps is pumped back to Lift Station #5 (located farther north in the Building A basement), and is then discharged to the sanitary system. Several floor drains in this area also used to drain groundwater from the basement floor; these drains are connected to the storm drain system that may provide a direct pathway to Cow Pen Creek.

This investigation was to provide additional information on the possible vapor pathways in Building A basement, specifically with respect to possible trichloroethene contamination from the historical plating shop. Ten additional vapor-monitoring points were installed; seven were installed on the eastern wall of Building A basement, and three were installed beneath the main floor. A Frog 4000™ field-portable gas chromatograph/mass spectrometer (GC/MS) was used to collect real-time air samples in the basement; samples were collected near cracks in floors or walls and near openings such as sumps or drains. The consistent detection of trichloroethene in indoor air at these basement sampling locations appears to correlate with the elevated trichloroethene concentrations identified at sub-slab sampling locations SV-174-A and SV-175-A, and in indoor air at the sump pit near column D26, at a sump pit near column D24, at a floor drain near column D27, and at an open pipe and hole in the wall near column D29. Only one sample collected from

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the breathing zone, proximate to the floor grate near column D26, had a trichloroethene concentration above the indoor air screening level.

## 5.2 RECOMMENDATIONS

Results of the vapor-intrusion investigations in Building A basement lead to the following recommendations:

- Continued operation of the sub-slab-depressurization systems in Building A.
- Consult with EMCOR, the on-site maintenance contractor, to obtain more information about the underground drainage and piping network in the basement.
- Evaluate ways to reduce trichloroethene concentrations in the Building A basement. Trichloroethene may result from venting through storm drains, tunnels, or walls, as well as from beneath the floor slab.
- Consider methods to seal select floor features (i.e., sump pits, cover plates and drains), thus mitigating migration of trichloroethene and other volatile organic compounds into indoor air. The high concentration of trichloroethene detected above a nearby floor grate suggests that the drain might be a preferential vapor-intrusion pathway. Therefore, sealing the floor drain (if sealing does not cause other problems) might further reduce indoor air concentrations of trichloroethene.
- Despite continuous operation of the air-filtration units in this area, trichloroethene continues to be detected near or above its indoor air screening concentration. Increased air exchange and ventilation should be considered in this area to further reduce indoor air concentrations of trichloroethene.
- Perform a groundwater analysis to determine if there is a connection between the trichloroethene plume west of Building A and the concentrations detected in the sumps.
- Evaluate the need for additional groundwater monitoring wells to assess subsurface conditions adjacent to Building A and the Building A basement.

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## Section 6

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## **APPENDIX A—SUB-SLAB AIR-SAMPLING LOG SHEETS**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-168-A</u>	IAQ Sample ID: _____
SV Canister #: <u>11286</u>	IAQ Canister #: _____
SV Regulator #: <u>10581</u>	IAQ Regulator #: _____
SV Start Time: <u>1230</u>	IAQ Start Time: _____
SV Start Pressure: <u>-28</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1343</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>0</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A MAIN FLOOR

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

MS/MSD	Duplicate ID No.:
--------	-------------------

**Signature(s):**




Project Site Name: BUILDING A VMP Date: 4/1/16  
 Project Number - Task: 112IC06279 Sampled By: T. APANAVAGE

SAMPLING DATA:	
SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-169-A</u>	IAQ Sample ID: _____
SV Canister #: <u>10494</u>	IAQ Canister #: _____
SV Regulator #: <u>11272</u>	IAQ Regulator #: _____
SV Start Time: <u>1207</u>	IAQ Start Time: _____
SV Start Pressure: <u>-28</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1314</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-3</u>	IAQ Stop Pressure: _____

SAMPLE COLLECTION INFORMATION:		
Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

LOCATION:  
BUILDING A BASEMENT

OBSERVATIONS / NOTES:

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



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-170-A</u>	IAQ Sample ID: _____
SV Canister #: <u>09741</u>	IAQ Canister #: _____
SV Regulator #: <u>09904</u>	IAQ Regulator #: _____
SV Start Time: <u>1208</u>	IAQ Start Time: _____
SV Start Pressure: <u>-29</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1316</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-3</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

<input type="checkbox"/> MS/MSD	<input type="checkbox"/> Duplicate ID No.:
---------------------------------	--

**Signature(s):**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-171-A</u>	IAQ Sample ID: _____
SV Canister #: <u>10495</u>	IAQ Canister #: _____
SV Regulator #: <u>11310</u>	IAQ Regulator #: _____
SV Start Time: <u>1211</u>	IAQ Start Time: _____
SV Start Pressure: <u>-28</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1323</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-5</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TDIS</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

<input type="checkbox"/> MS/MSD	<input type="checkbox"/> Duplicate ID No.:
---------------------------------	--

**Signature(s):**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-172-A</u>	IAQ Sample ID: _____
SV Canister #: <u>10333</u>	IAQ Canister #: _____
SV Regulator #: <u>10662</u>	IAQ Regulator #: _____
SV Start Time: <u>1209</u>	IAQ Start Time: _____
SV Start Pressure: <u>-30</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1318</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-5</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

MS/MSD Duplicate ID No.:

**Signature(s):**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

SAMPLING DATA:

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-173-A</u>	IAQ Sample ID: _____
SV Canister #: <u>09797</u>	IAQ Canister #: _____
SV Regulator #: <u>09704</u>	IAQ Regulator #: _____
SV Start Time: <u>1210</u>	IAQ Start Time: _____
SV Start Pressure: <u>-26</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1321</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-2</u>	IAQ Stop Pressure: _____

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected
<u>TO 15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

LOCATION:

BUILDING A BASEMENT

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD Duplicate ID No.:

Signature(s):



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

SAMPLING DATA:

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-174-A</u>	IAQ Sample ID: _____
SV Canister #: <u>09788</u>	IAQ Canister #: _____
SV Regulator #: <u>09912</u>	IAQ Regulator #: _____
SV Start Time: <u>1218</u>	IAQ Start Time: _____
SV Start Pressure: <u>-29</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1330</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>0</u>	IAQ Stop Pressure: _____

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected
<u>TD15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

LOCATION:

BUILDING A BASEMENT

OBSERVATIONS / NOTES:

DUPLICATE COLLECTED

Circle if Applicable:

MS/MSD	Duplicate ID No.: <u>SV-DUP-A</u>
	<u>-30/0</u> <u>10920 CAN</u> <u>10592 REG</u>

Signature(s):





Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-175A</u>	IAQ Sample ID: _____
SV Canister #: <u>09666</u>	IAQ Canister #: _____
SV Regulator #: <u>10647</u>	IAQ Regulator #: _____
SV Start Time: <u>1212</u>	IAQ Start Time: _____
SV Start Pressure: <u>-29</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1325</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-2</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

MS/MSD	Duplicate ID No.:
--------	-------------------

**Signature(s):**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-176A</u>	IAQ Sample ID: _____
SV Canister #: <u>09636</u>	IAQ Canister #: _____
SV Regulator #: <u>10625</u>	IAQ Regulator #: _____
SV Start Time: <u>1220</u>	IAQ Start Time: _____
SV Start Pressure: <u>-30</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1331</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-1</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

MS/MSD	Duplicate ID No.:
--------	-------------------

**Signature(s):**



Project Site Name: BUILDING A VMP  
Project Number - Task: 112IC06279

Date: 4/1/16  
Sampled By: T. APANAVAGE

**SAMPLING DATA:**

SOIL VAPOR SAMPLE	INDOOR AIR QUALITY SAMPLE
SV Sample ID: <u>SV-177-A</u>	IAQ Sample ID: _____
SV Canister #: <u>10962</u>	IAQ Canister #: _____
SV Regulator #: <u>09913</u>	IAQ Regulator #: _____
SV Start Time: <u>1221</u>	IAQ Start Time: _____
SV Start Pressure: <u>-30</u>	IAQ Start Pressure: _____
SV Stop Time: <u>1333</u>	IAQ Stop Time: _____
SV Stop Pressure: <u>-1</u>	IAQ Stop Pressure: _____

**SAMPLE COLLECTION INFORMATION:**

Analysis	Container Requirements	Collected
<u>TO15</u>	<u>1 L SUMMA</u>	<input checked="" type="checkbox"/>

**LOCATION:**

BUILDING A BASEMENT

**OBSERVATIONS / NOTES:**

**Circle if Applicable:**

MS/MSD	Duplicate ID No.:
--------	-------------------

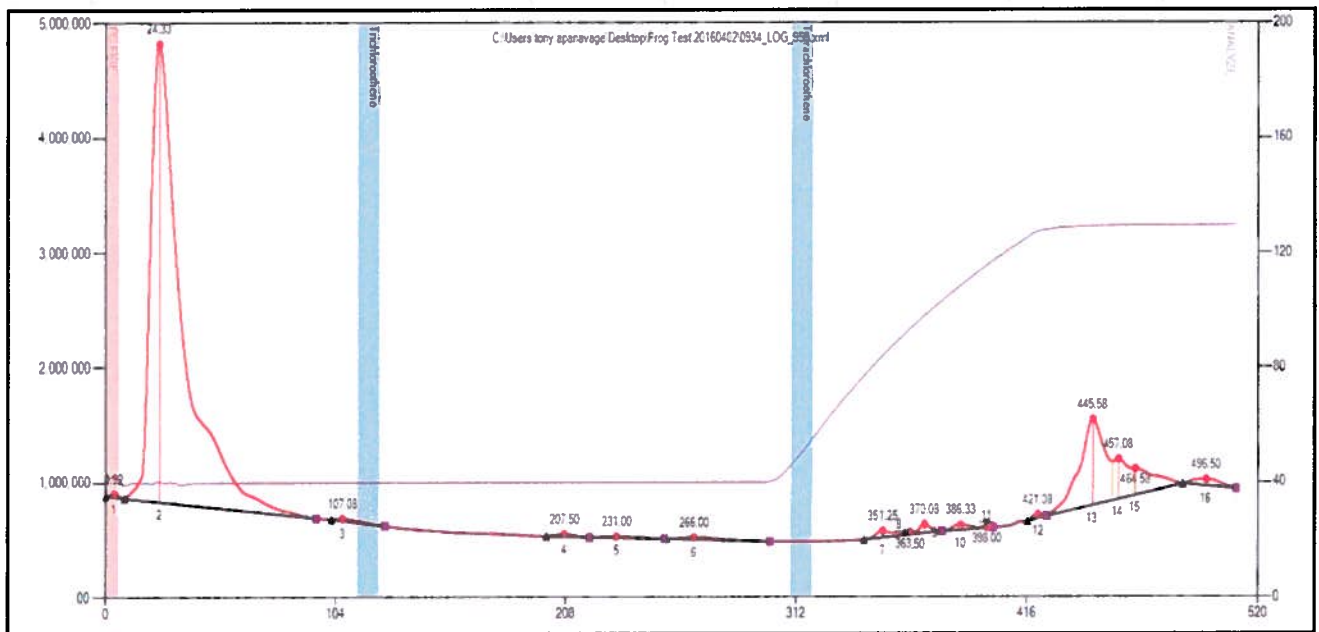
**Signature(s):**

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## **APPENDIX B—PORTABLE GC/MS SURVEY-DATA LOG SHEETS**

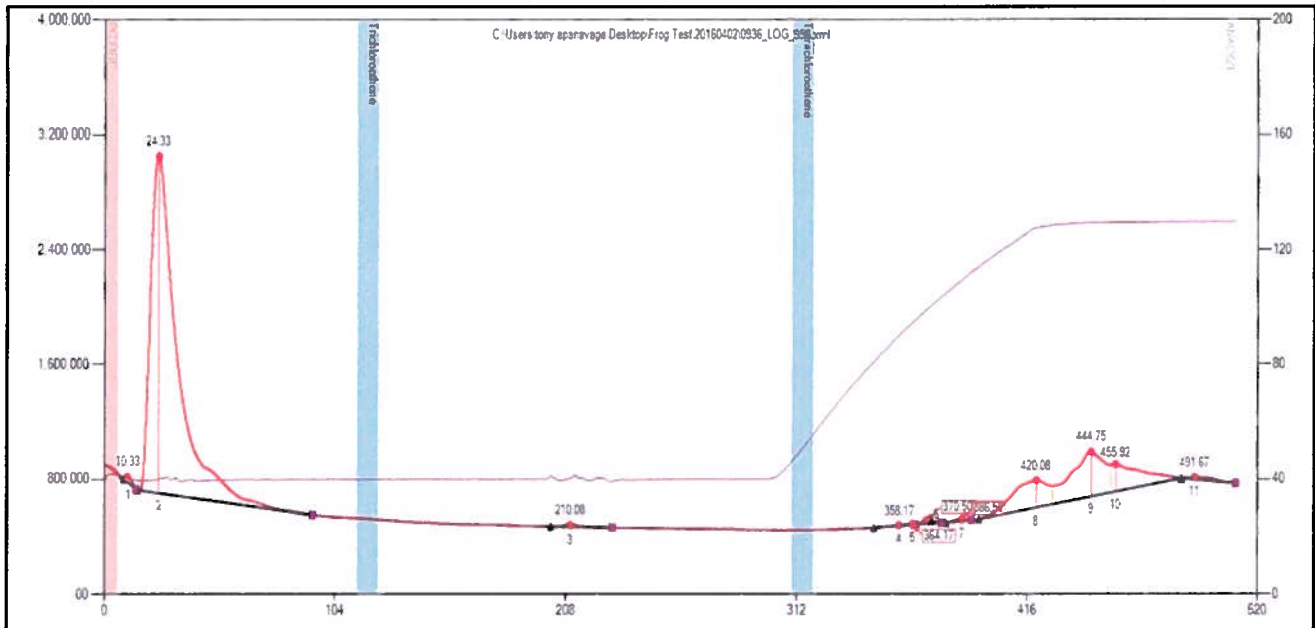
**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_955.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		3.92			120004	26390
2		24.33			66150919	3984457
3		107.08			269999	18580
4		207.5			200647	23299
5		231			190544	10770
6		266			373150	19309
7		351.25			467249	59867
8		363.5			105063	21360
9		370.08			434488	77817
10		386.33			371936	42732
11		398			32665	6359
12		421.08			153552	33376
13		445.58			9702365	747019
14		457.08			2731474	348715
15		464.58			2642336	230048
16		496.5			773494	55469



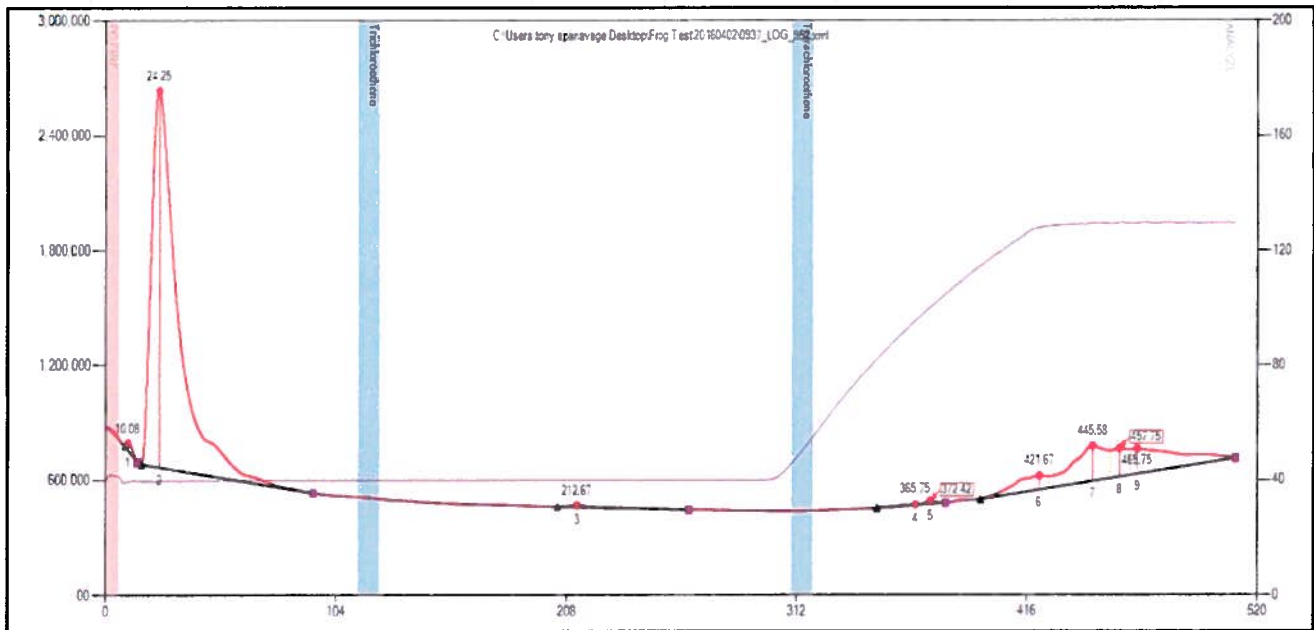
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_956.LOG**

Peak	Analyte Name	Time	Concentration n	x Dilution	Area	Height
1		10.33			149973	35598
2		24.33			32281803	2344833
3		210.08			123324	12721
4		358.17			19929	3165
5		364.17			7657	1995
6		370.5			109016	21840
7		386.5			58646	8481
8		420.08			3557694	188954
9		444.75			5528914	308111
10		455.92			3018571	189510
11		491.67			225122	14962



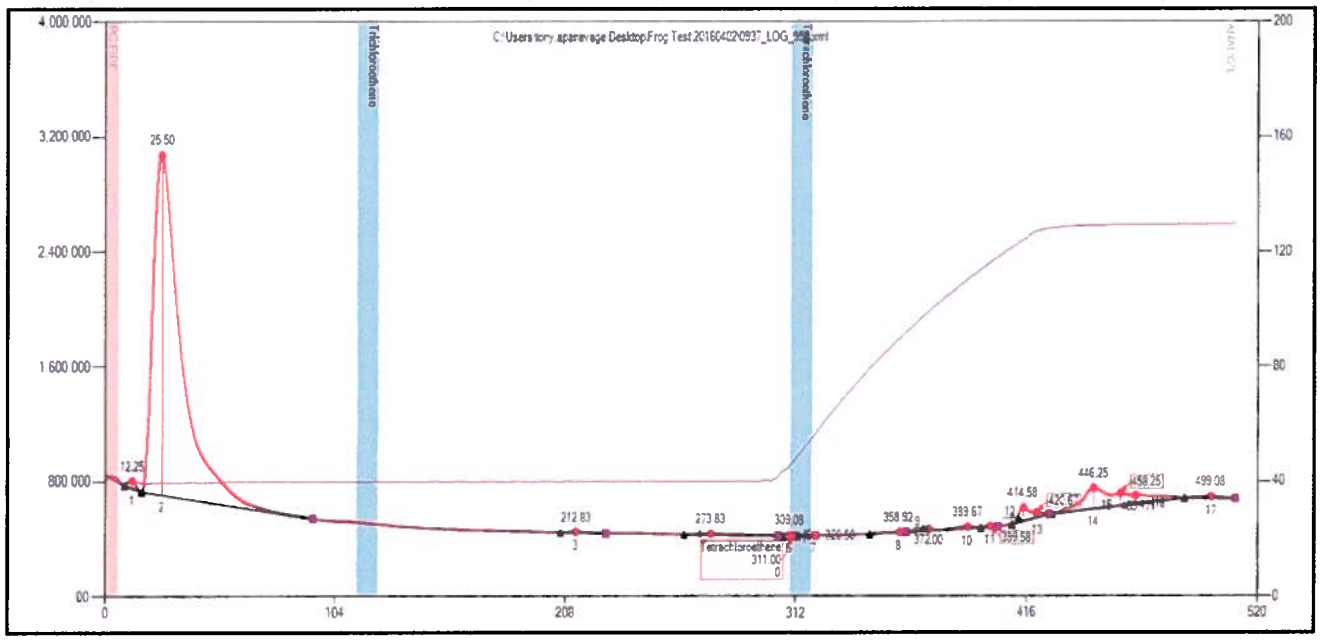
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_957.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.08			148808	35812
2		24.25			27135087	1967474
3		212.67			151262	9849
4		365.75			26718	2811
5		372.42			81935	16066
6		421.67			1297780	73238
7		445.58			3364227	183877
8		457.75			1246789	148378
9		465.75			3220966	129717



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_958.LOG**

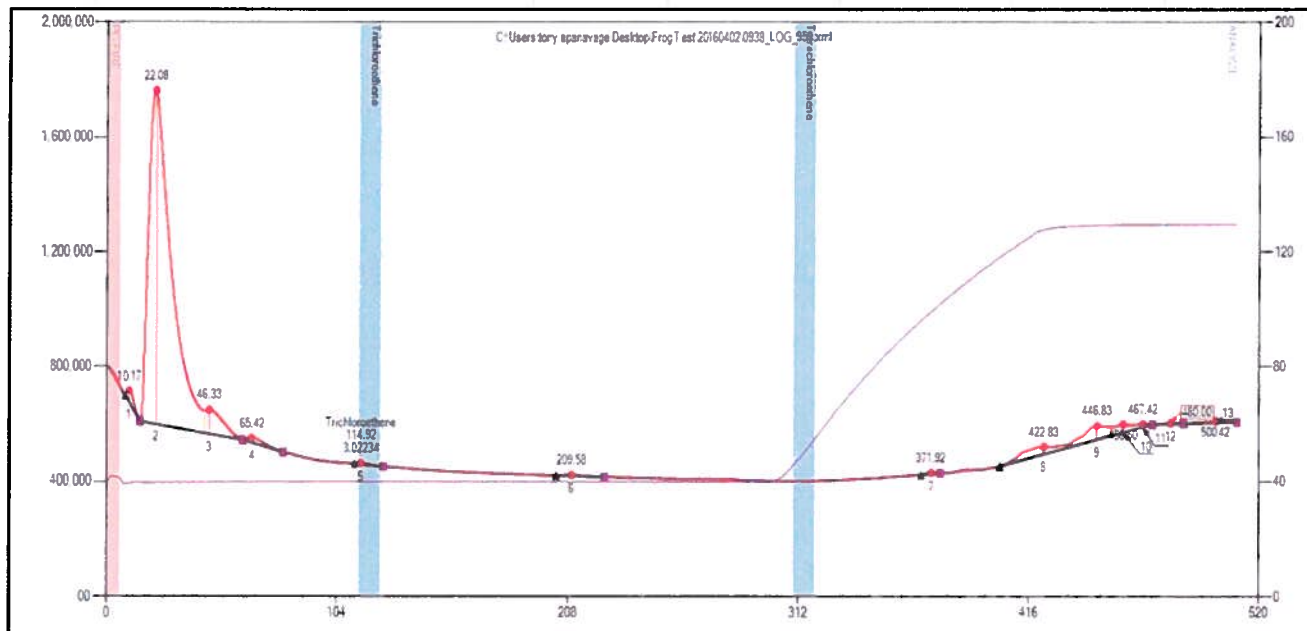
Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.25			217080	51551
2		25.5			34450924	2362788
3		212.83			55897	6235
4		273.83			139780	6608
5		309.08			4161	2035
6	Tetrachloroethene	311	0	0	5913	5079
7		320.5			4659	718
8		358.92			47793	2893
9		372			69416	12378
10		389.67			103042	10998
11		399.58			26450	6119
12		414.58			510686	94972
13		420.67			152971	36113
14		446.25			1811725	146343
15		458.25			706877	87550
16		465.17			760741	59952
17		499.08			158267	13008





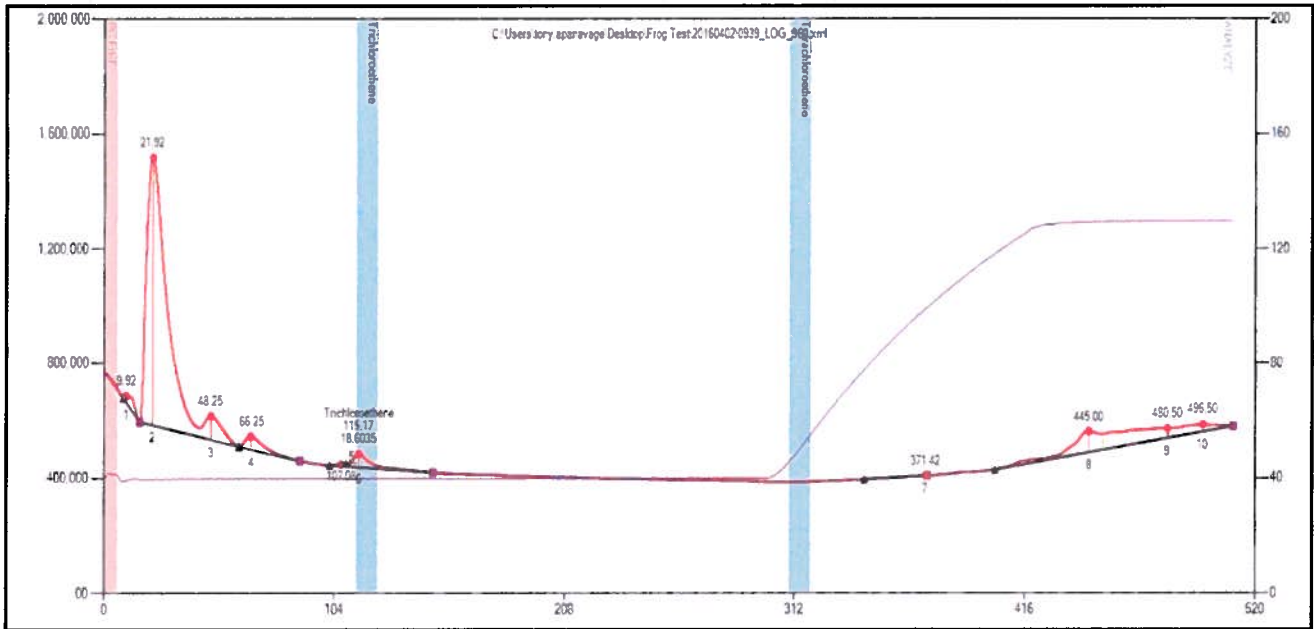
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_959.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.17			155542	39856
2		22.08			13774019	1161042
3		46.33			826435	83854
4		65.42			153749	15895
5	Trichloroethene	114.92	3.02234	3.02234	26000	3209
6		209.58			33396	3449
7		371.92			20207	4191
8		422.83			405202	25846
9		446.83			729063	47300
10		458.5			222845	28502
11		467.42			98510	10681
12		480			19793	2501
13		500.42			64734	5675



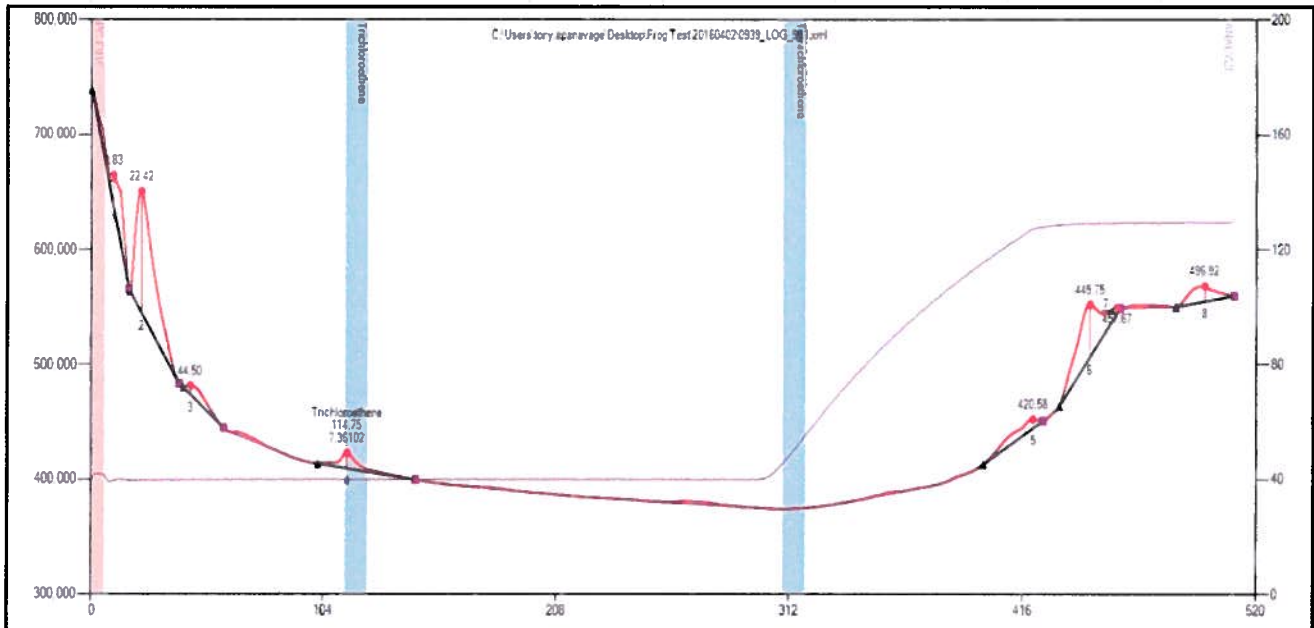
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_960.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			180048	22221
2		21.92			9762538	931719
3		48.25			795741	82798
4		66.25			447342	45574
5		107.08			22028	4856
6	Trichloroethene	115.17	18.6035	18.6035	434577	45857
7		371.42			26997	543
8		445			1104071	73088
9		480.5			1367092	33566
10		496.5			606785	24181



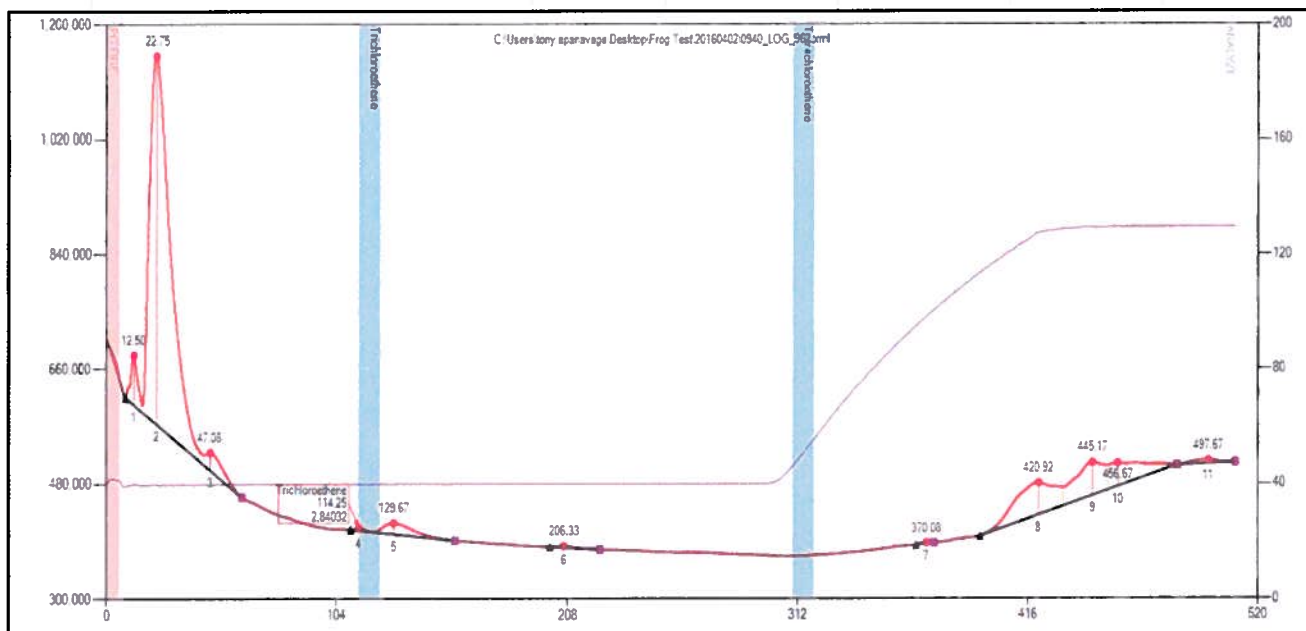
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_961.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.83			310205	27192
2		22.42			1038342	105959
3		44.5			104587	7703
4	Trichloroethene	114.75	7.36102	7.36102	139771	13509
5		420.58			138928	7806
6		445.75			536749	46020
7		457.67			61826	5179
8		496.92			187635	13470



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_962.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.5			293980	78116
2		22.75			6363798	577265
3		47.08			275628	27950
4	Trichloroethene	114.25	2.84032	2.84032	21227	3930
5		129.67			269332	17561
6		206.33			21177	2330
7		370.08			8586	1825
8		420.92			1070624	50053
9		445.17			826905	51319
10		456.67			652131	36138
11		497.67			66584	4819

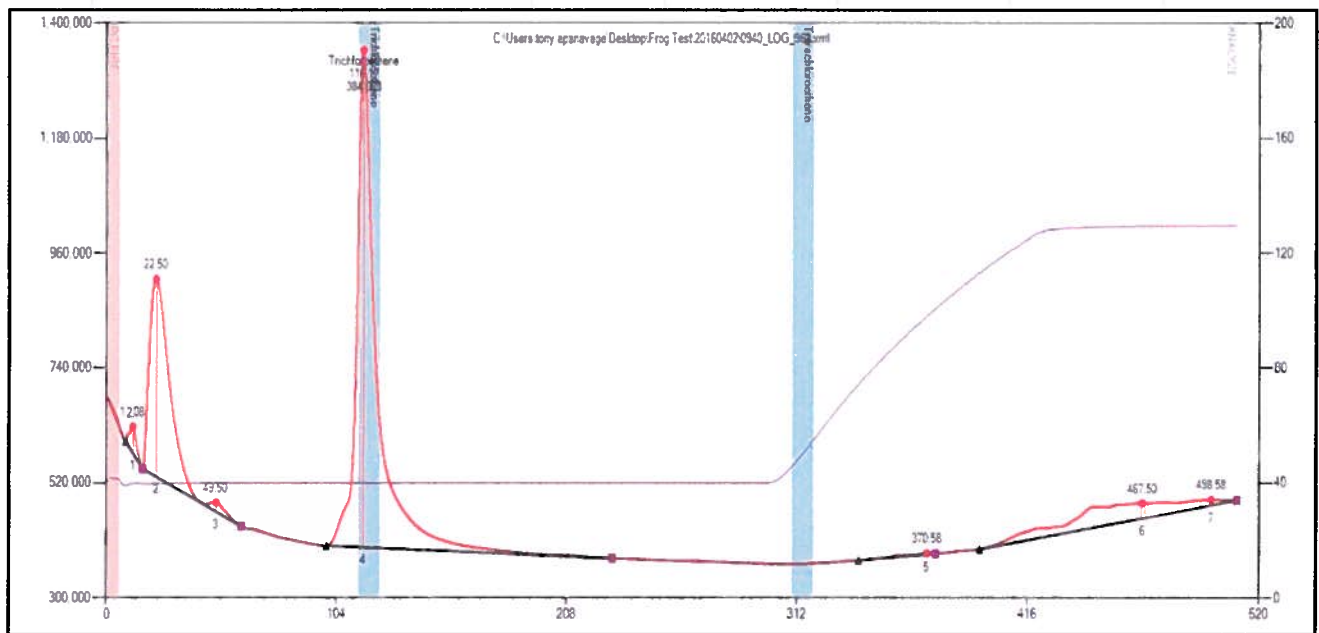


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**Dilution = 1.0**

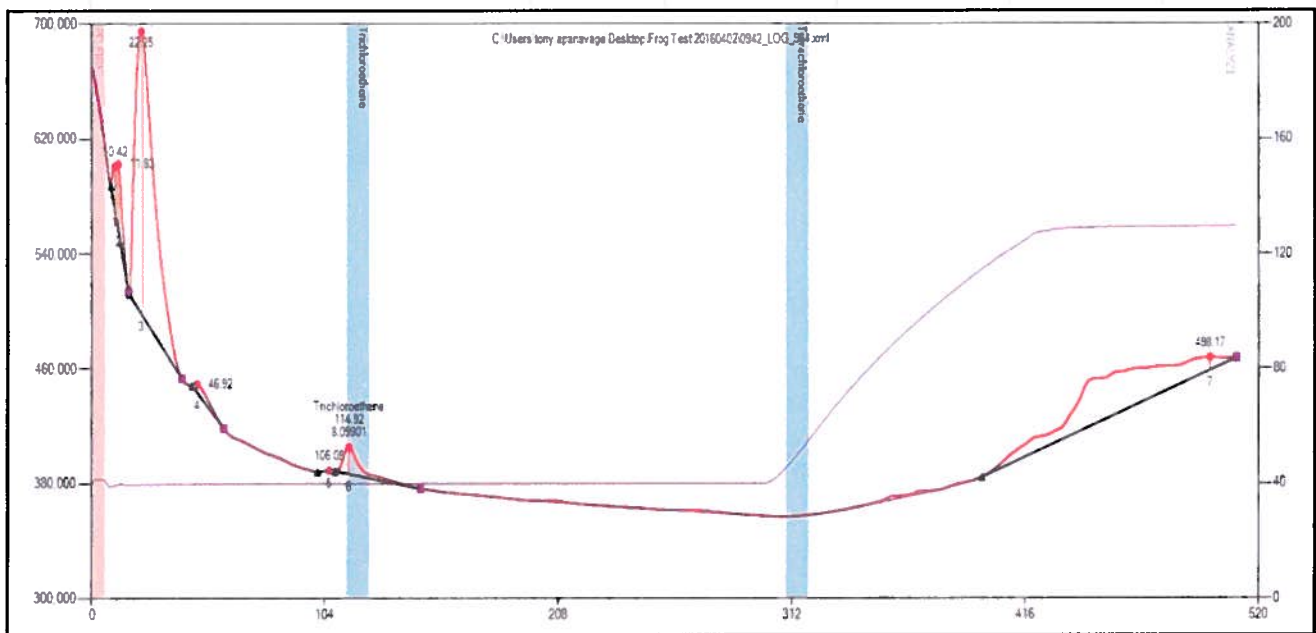
**C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_963.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.08			191794	51395
2		22.5			3915547	377962
3		49.5			145795	17524
4	Trichloroethene	116.17	384.068	384.068	10017971	951455
5		370.58			32318	1968
6		467.5			1545208	28758
7		498.58			582738	10030



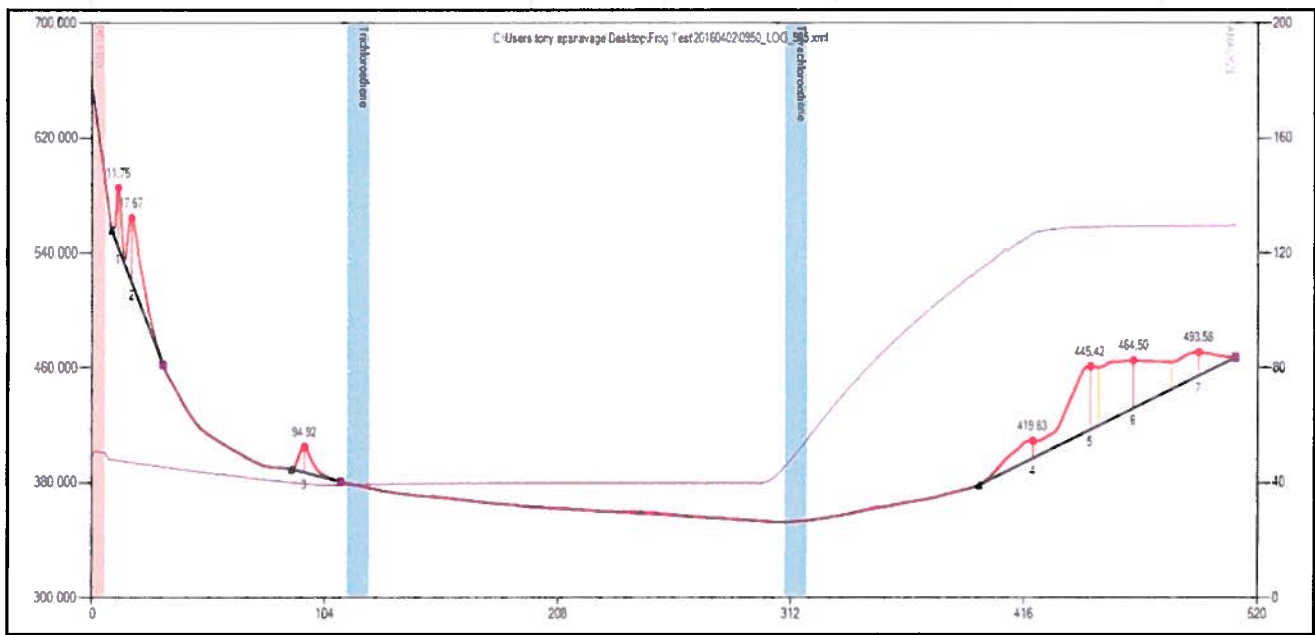
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_964.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.42			48231	30201
2		11.83			132465	45373
3		22.25			1966944	196647
4		46.92			54046	5749
5		106.08			1808	501
6	Trichloroethene	114.92	8.09901	8.09901	159123	18666
7		498.17			1625694	9048



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_965.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.75			111856	41746
2		17.67			331028	44892
3		94.92			123958	17818
4		419.83			190912	12186
5		445.42			704244	44028
6		464.5			1024906	33389
7		493.58			351844	16466

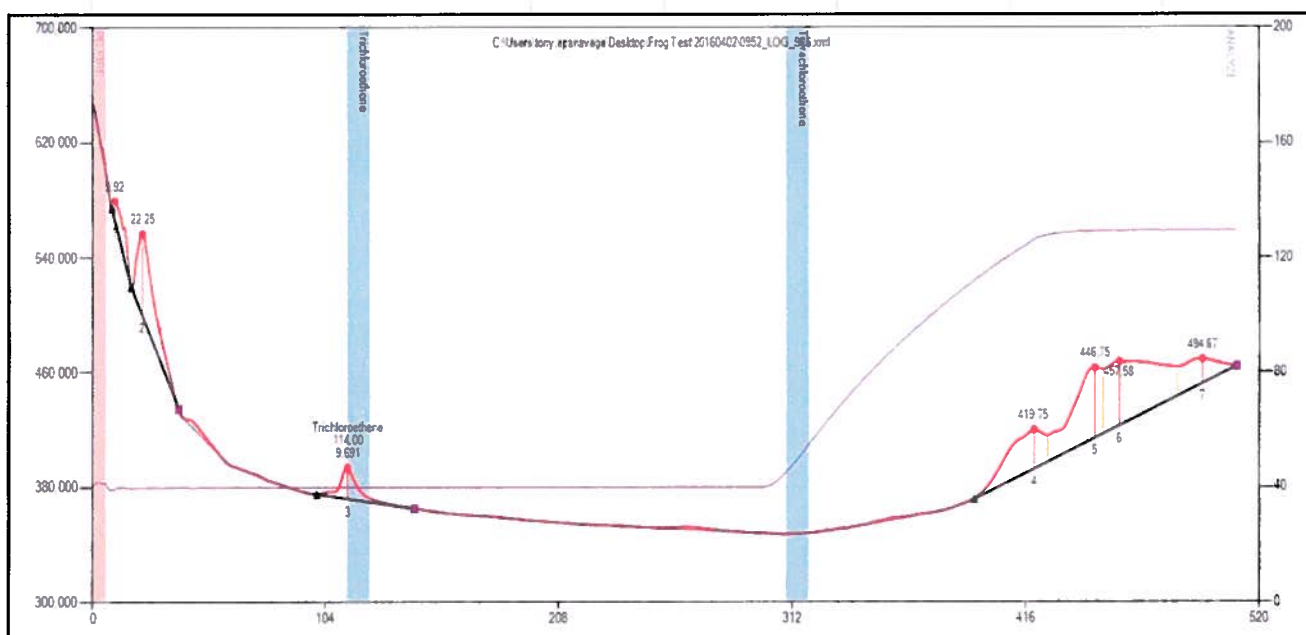


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 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_966.LOG

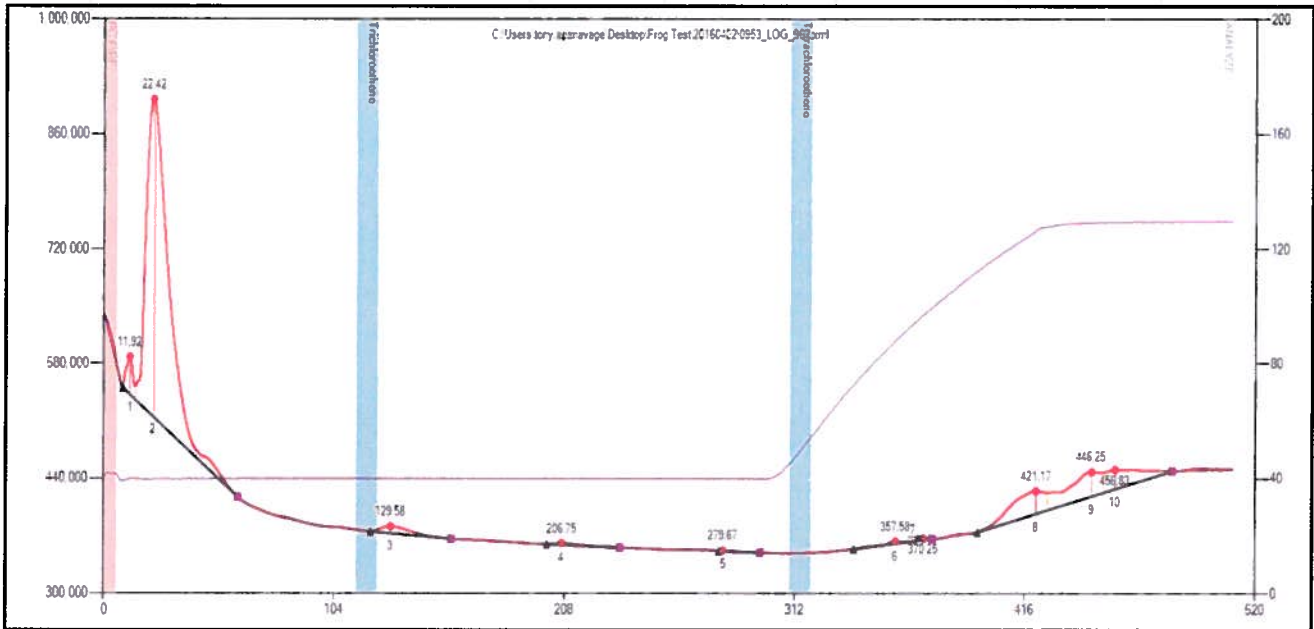
Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			125607	12978
2		22.25			528210	56894
3	Trichloroethene	114	9.691	9.691	200869	21854
4		419.75			538228	27288
5		446.75			782080	48621
6		457.58			1174899	44597
7		494.67			342558	17025





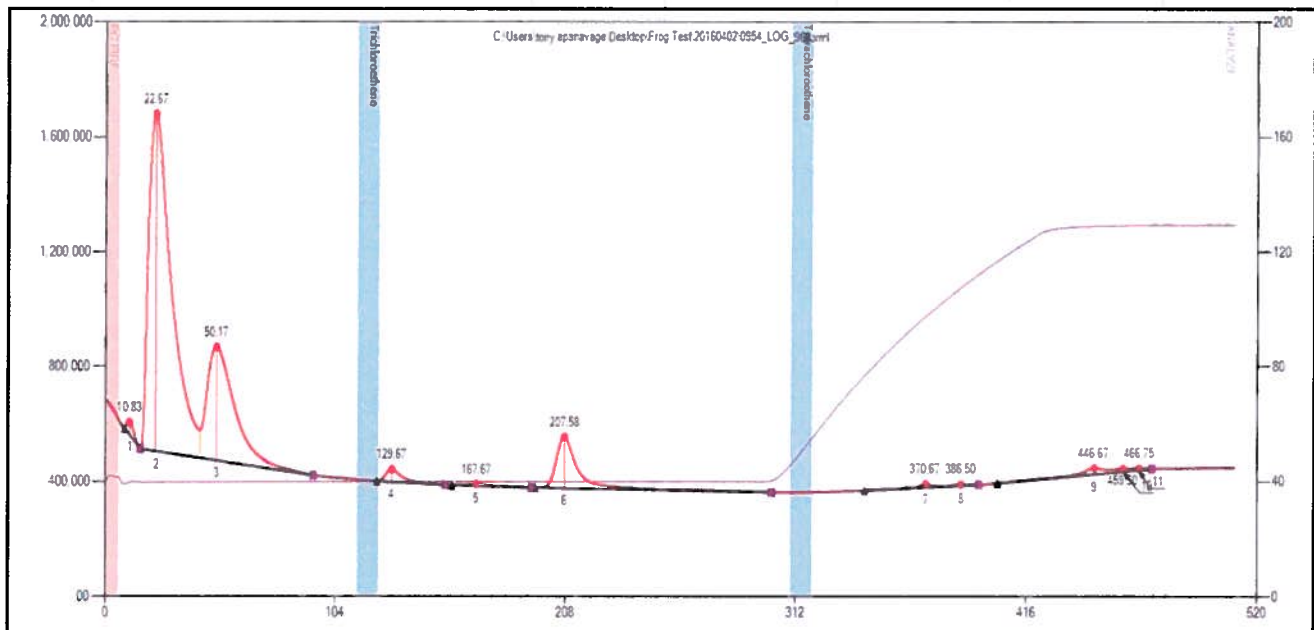
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_967.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.92			162712	46463
2		22.42			4512728	387035
3		129.58			125856	8422
4		206.75			27008	2290
5		279.67			6470	1035
6		357.58			24124	3055
7		370.25			15626	2080
8		421.17			512859	27706
9		446.25			582318	29694
10		456.83			437429	23786



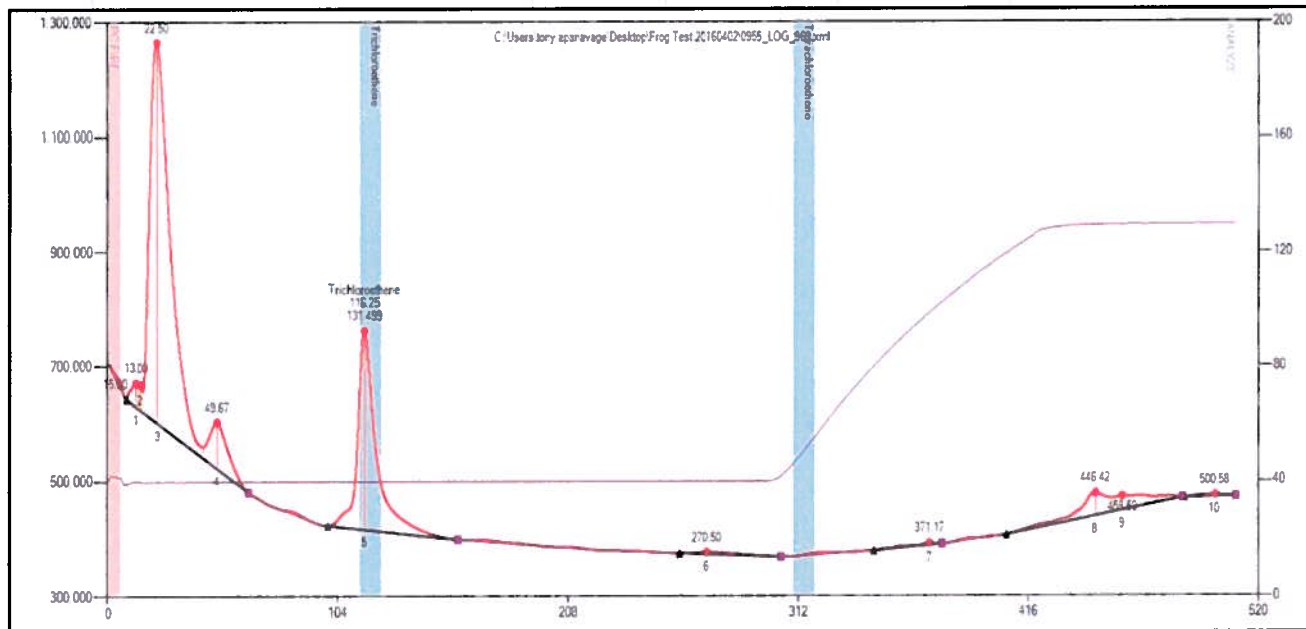
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_968.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.83			167718	43577
2		22.67			14068408	1175740
3		50.17			5837208	395244
4		129.67			376877	44293
5		167.67			120922	6810
6		207.58			2024298	177928
7		370.67			92690	11103
8		386.5			32797	3907
9		446.67			288027	21145
10		459.5			79750	9678
11		466.75			40771	5289



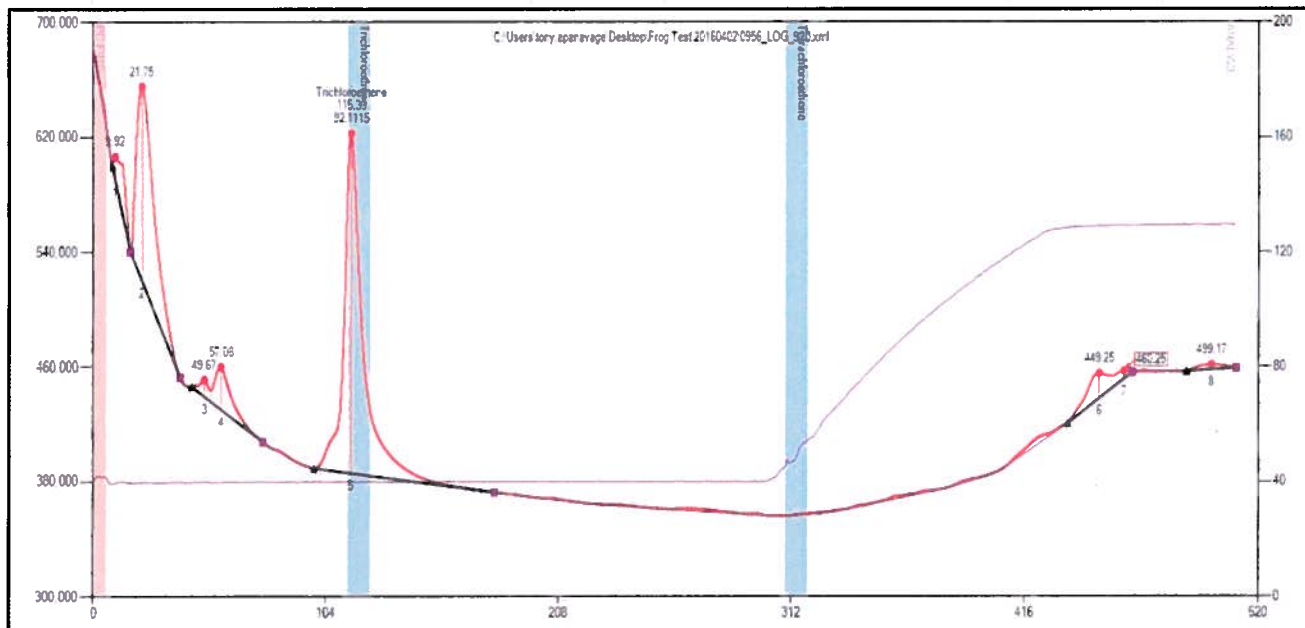
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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_969.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		13			143910	40701
2		15			92947	44263
3		22.5			7137823	661556
4		49.67			801380	81165
5	Trichloroethene	116.25	131.499	131.499	3394982	345897
6		270.5			87440	3560
7		371.17			45057	3418
8		446.42			589167	39451
9		458.5			440153	24464
10		500.58			38741	3044



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_970.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			155935	16104
2		21.75			1257698	134975
3		49.67			58789	11793
4		57.08			252256	29821
5	Trichloroethene	115.33	92.1115	92.1115	2362141	236759
6		449.25			189409	17353
7		460.25			46167	5433
8		499.17			43297	3208

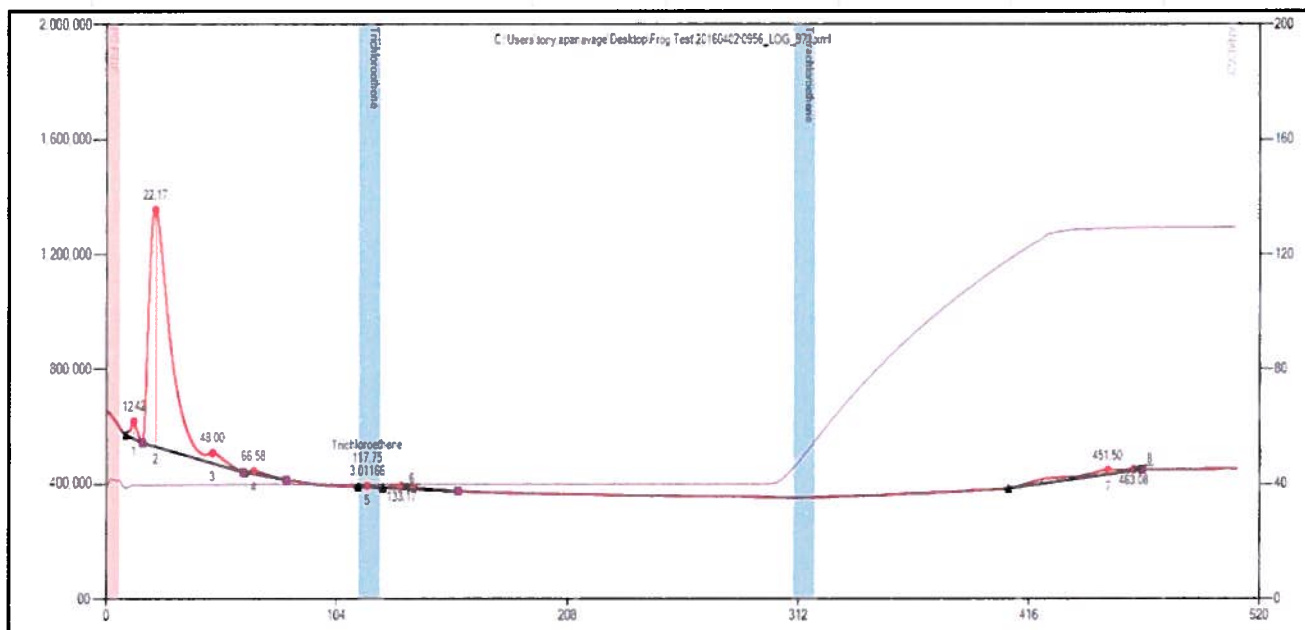


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 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_971.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.42			218351	61979
2		22.17			8799097	824601
3		48			342192	35857
4		66.58			87464	9524
5	Trichloroethene	117.75	3.01166	3.01166	25720	4703
6		133.17			137492	9476
7		451.5			458998	14610
8		463.08			67674	4793

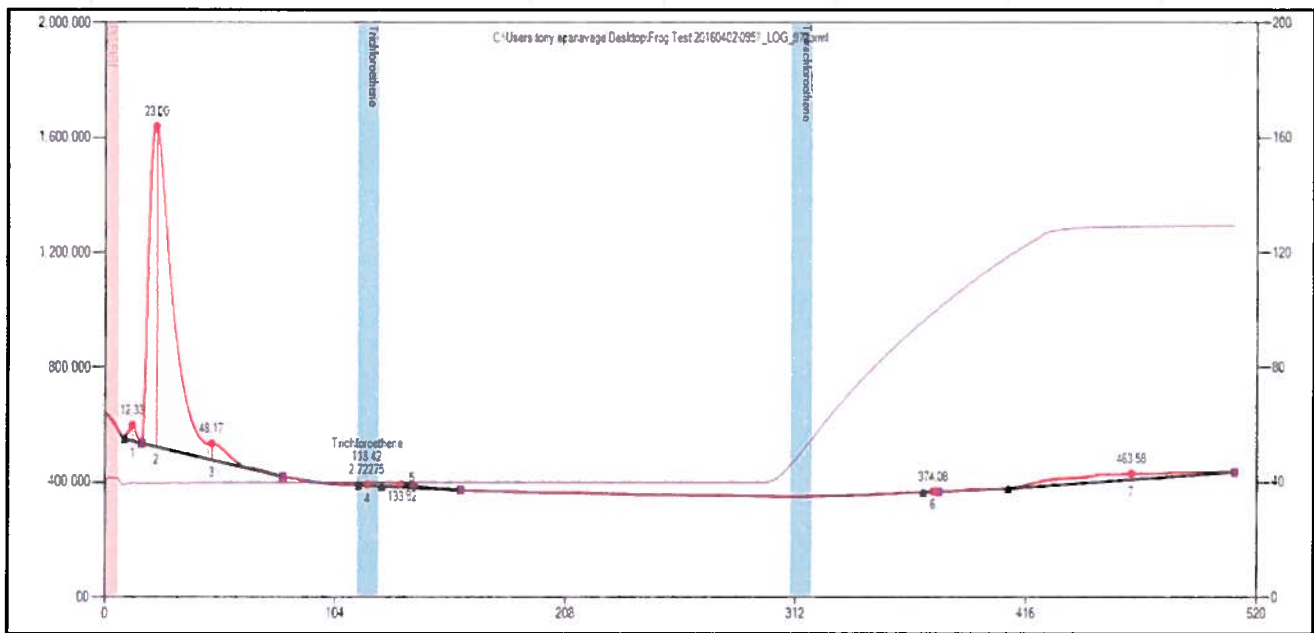


FROG-0033: Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_972.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.33			210363	55992
2		23			13333502	1116117
3		48.17			618107	56805
4	Trichloroethene	118.42	2.72275	2.72275	18144	3275
5		133.92			148365	9943
6		374.08			5993	1416
7		463.58			1445781	20888

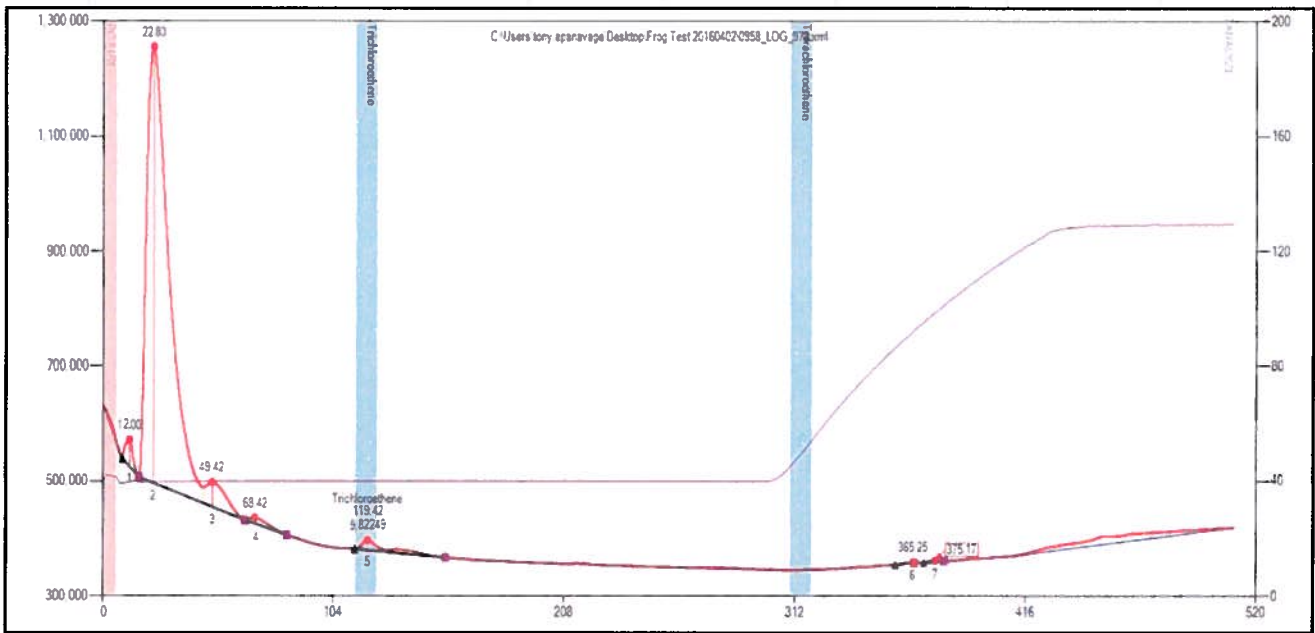


FROG-0033: Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

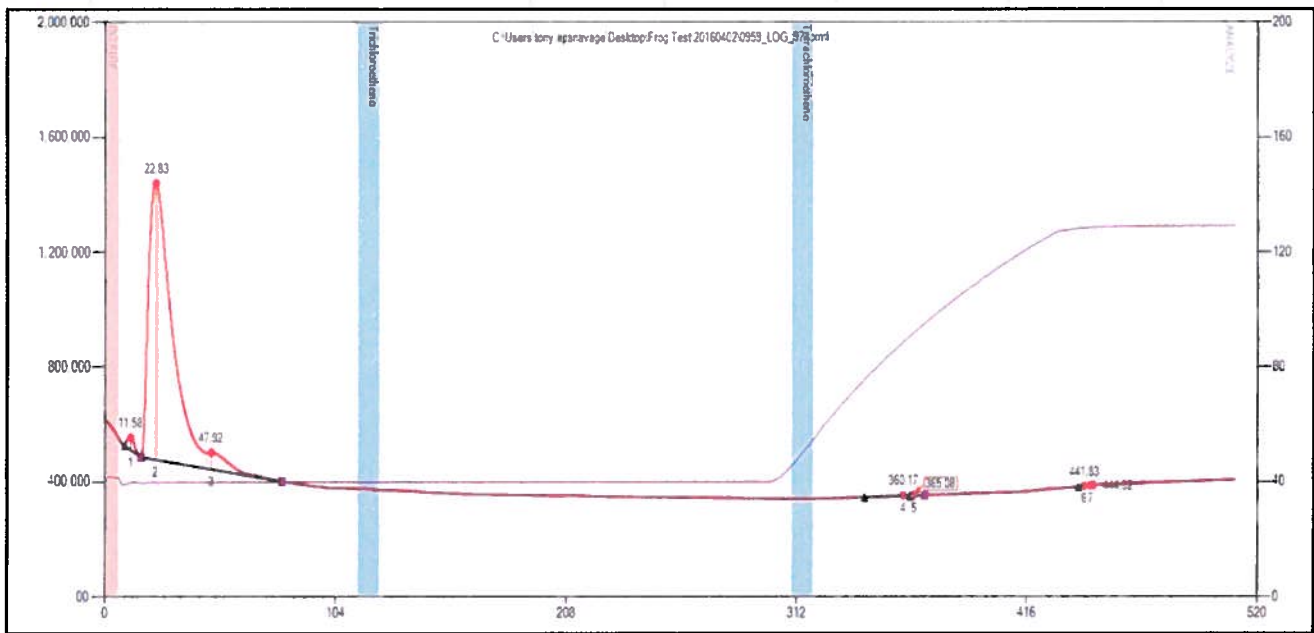
C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_973.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12			183904	46915
2		22.83			8927820	759192
3		49.42			467862	42788
4		68.42			100636	10023
5	Trichloroethene	119.42	9.82249	9.82249	204317	17044
6		365.25			6429	589
7		375.17			6777	1428



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_974.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.58			167873	43636
2		22.83			11660335	962107
3		47.92			686835	58750
4		360.17			11216	2013
5		365.08			12626	3101
6		441.83			2206	1193
7		444.92			2142	621



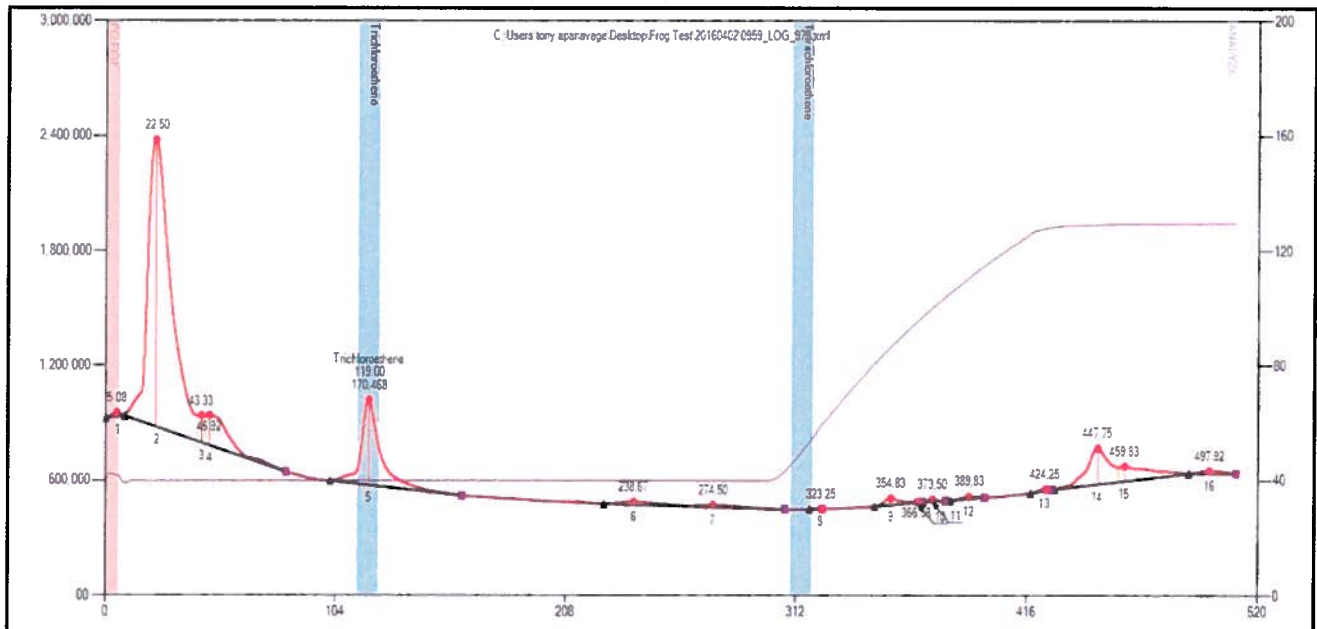


FROG-0033: Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

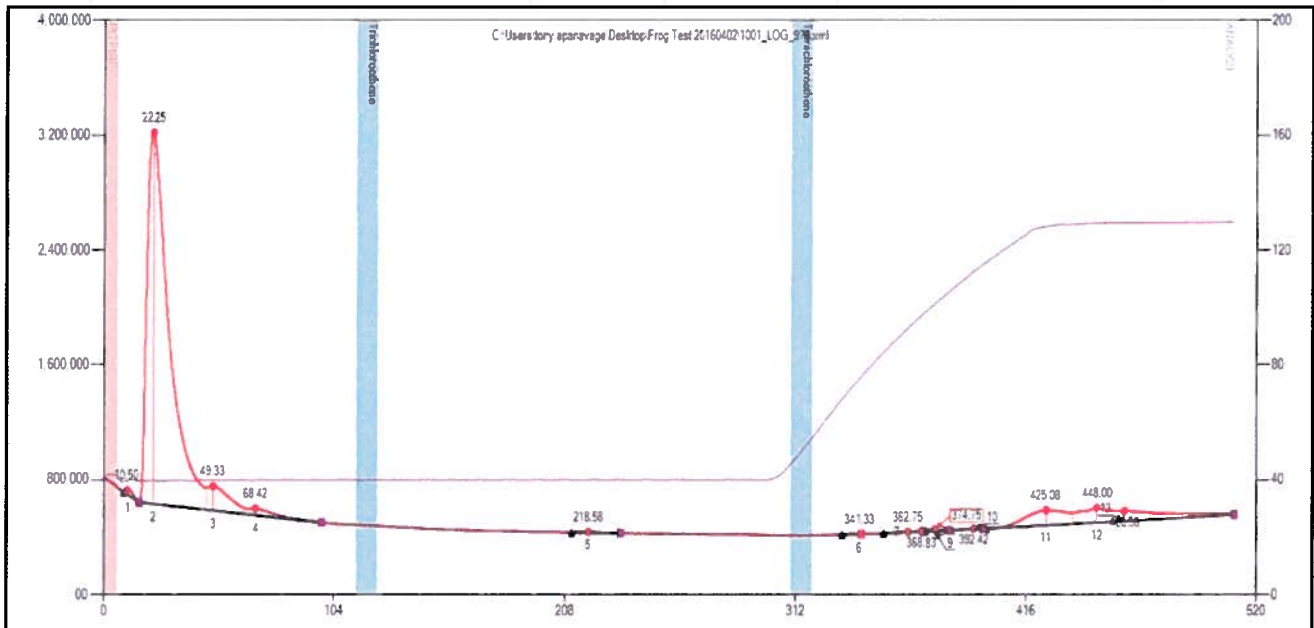
C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_975.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		5.08			90339	20875
2		22.5			18246335	1496170
3		43.33			518653	142439
4		46.92			1926031	156573
5	Trichloroethene	119	170.468	170.468	4416838	445015
6		238.67			337675	15214
7		274.5			258528	11929
8		323.25			1388	331
9		354.83			263290	34615
10		366.58			17251	3596
11		373.5			54132	11555
12		389.83			88873	11847
13		424.25			38361	6774
14		447.75			2227372	187806
15		459.83			1258729	78184
16		497.92			189244	14660



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_976.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.5			149187	28171
2		22.25			29830161	2583780
3		49.33			2068736	169419
4		68.42			581516	46103
5		218.58			48012	5207
6		341.33			2685	1067
7		362.75			12300	2470
8		368.83			4819	789
9		374.75			46526	9670
10		392.42			40274	3695
11		425.08			2171036	104279
12		448			1700768	98726
13		460.58			1680063	67231

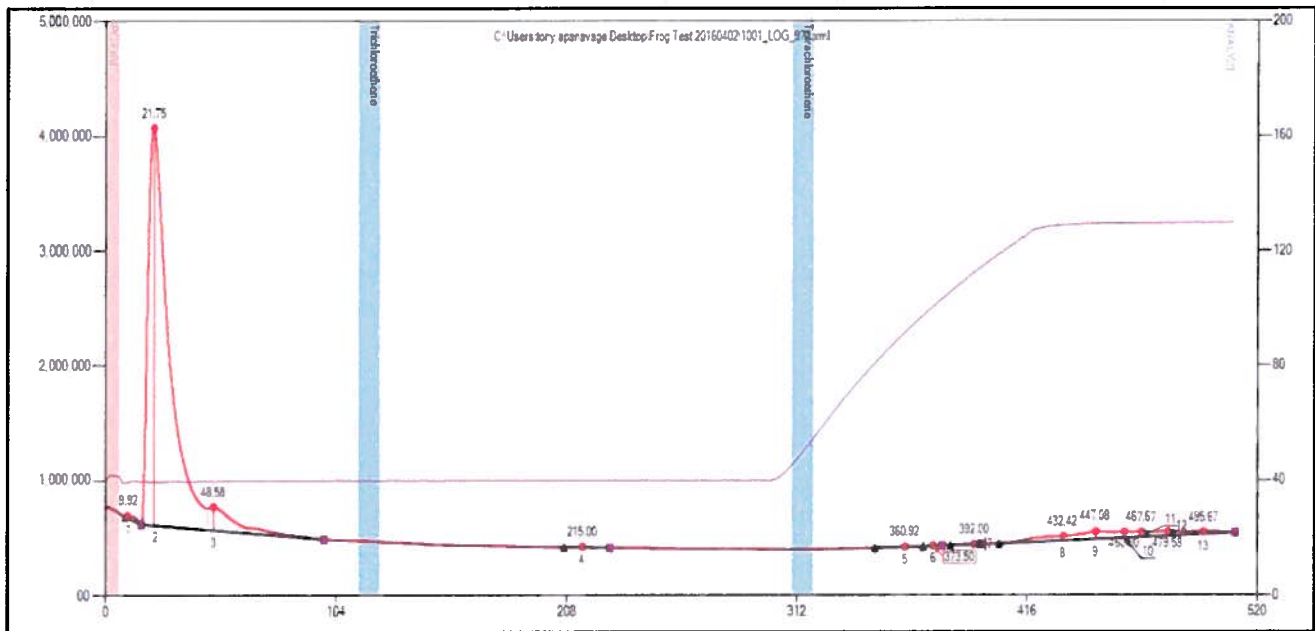


FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
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Dilution = 1.0

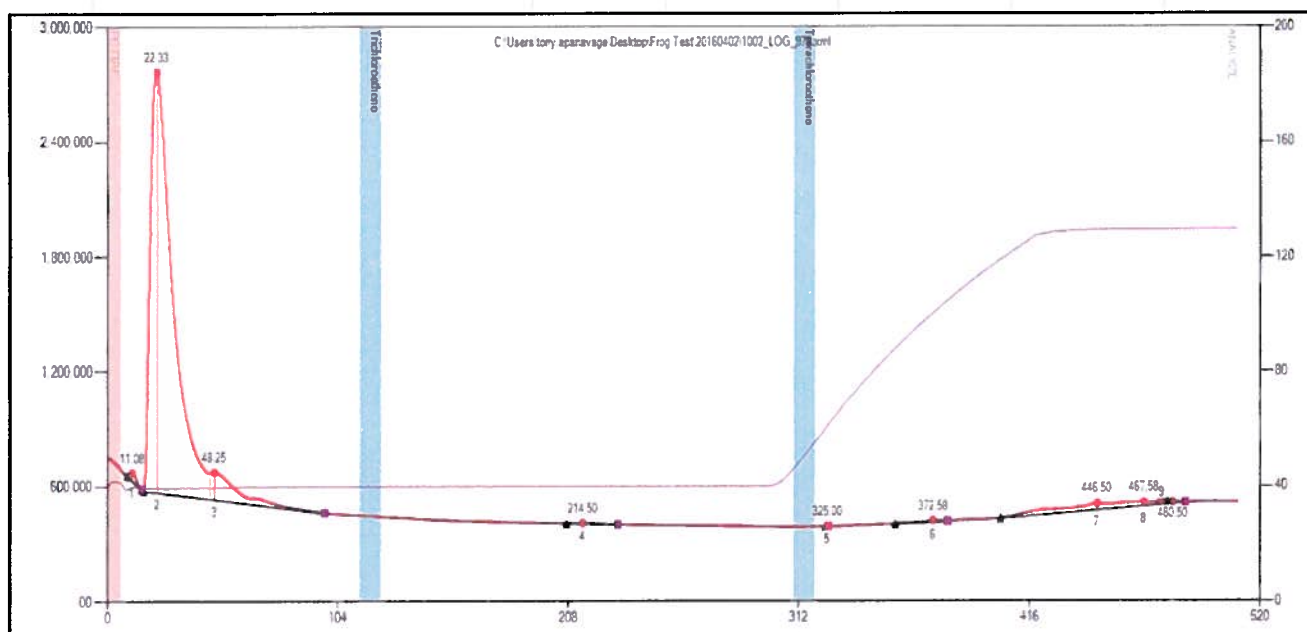
C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_977.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			147309	15963
2		21.75			37404697	3457505
3		48.58			3091140	202290
4		215			48738	5291
5		360.92			21231	2569
6		373.5			22816	5107
7		392			34972	2983
8		432.42			657666	37196
9		447.08			1125351	64353
10		460			396064	50114
11		467.67			440337	44298
12		479.58			447551	33994
13		495.67			325233	19586



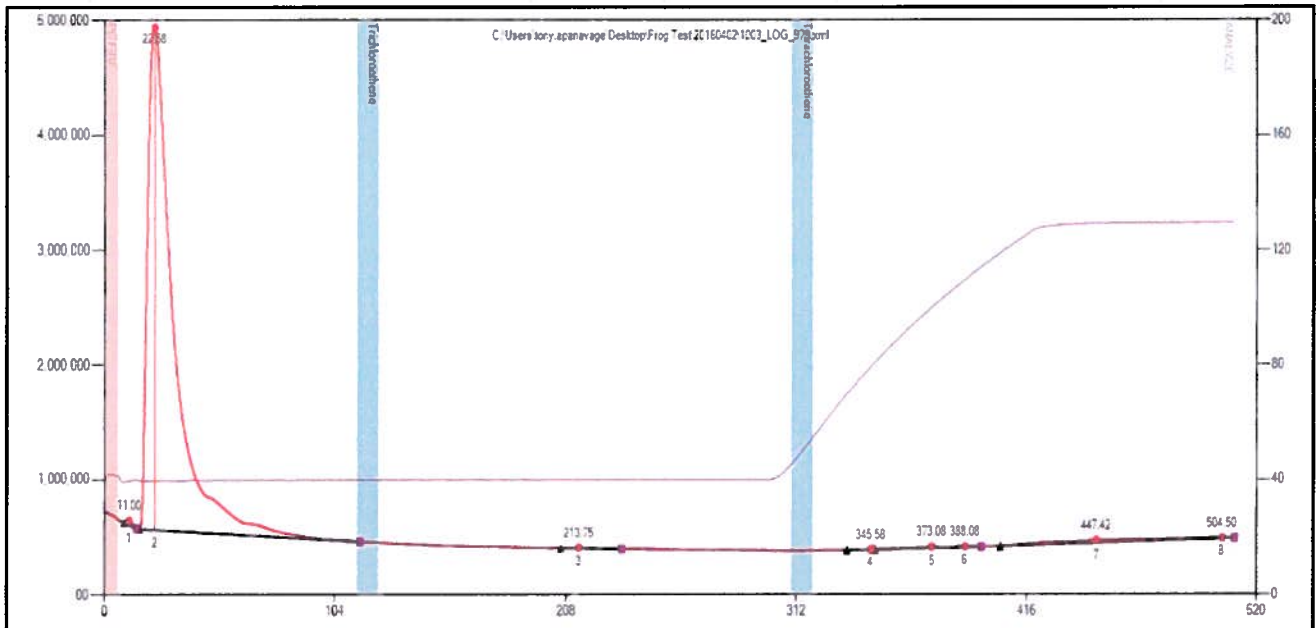
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_978.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.08			154650	40466
2		22.33			25711089	2195285
3		48.25			2115857	144031
4		214.5			37295	3792
5		325			274	356
6		372.58			57070	7823
7		446.5			991157	34007
8		467.58			412293	18245
9		480.5			103281	6794



**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_979.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11			139094	38719
2		22.58			59178633	4370781
3		213.75			49125	4883
4		345.58			3664	513
5		373.08			101949	11748
6		388.08			44619	5007
7		447.42			650084	23155
8		504.5			652201	4146

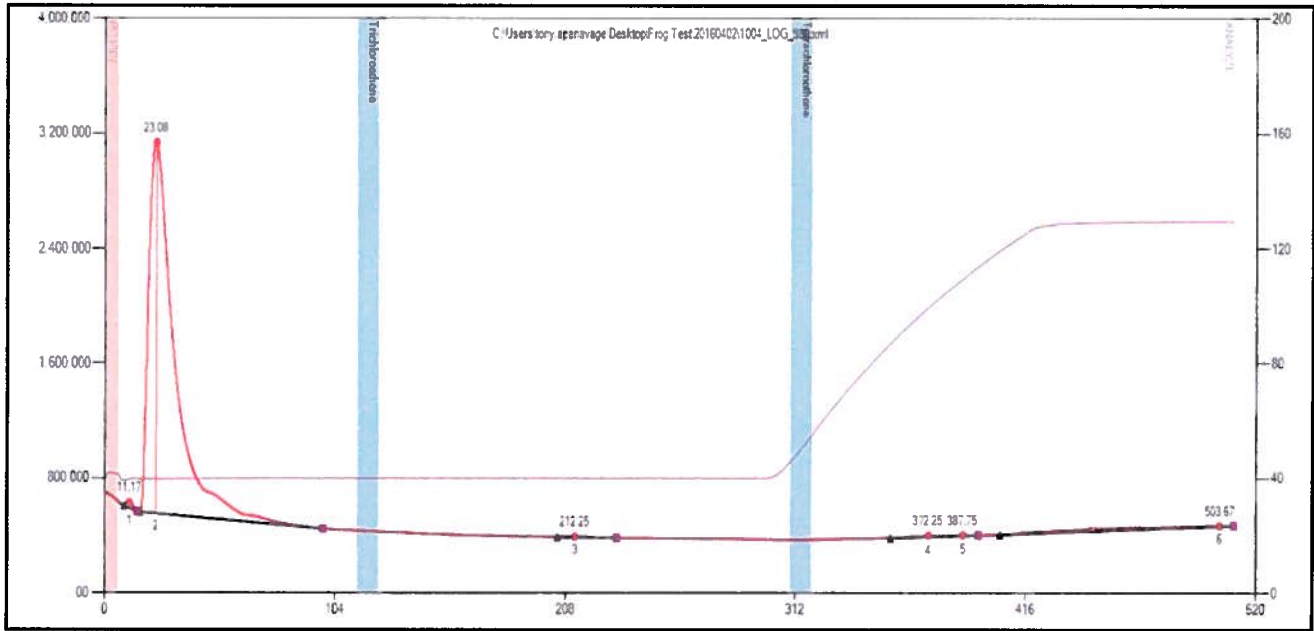


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Dilution = 1.0

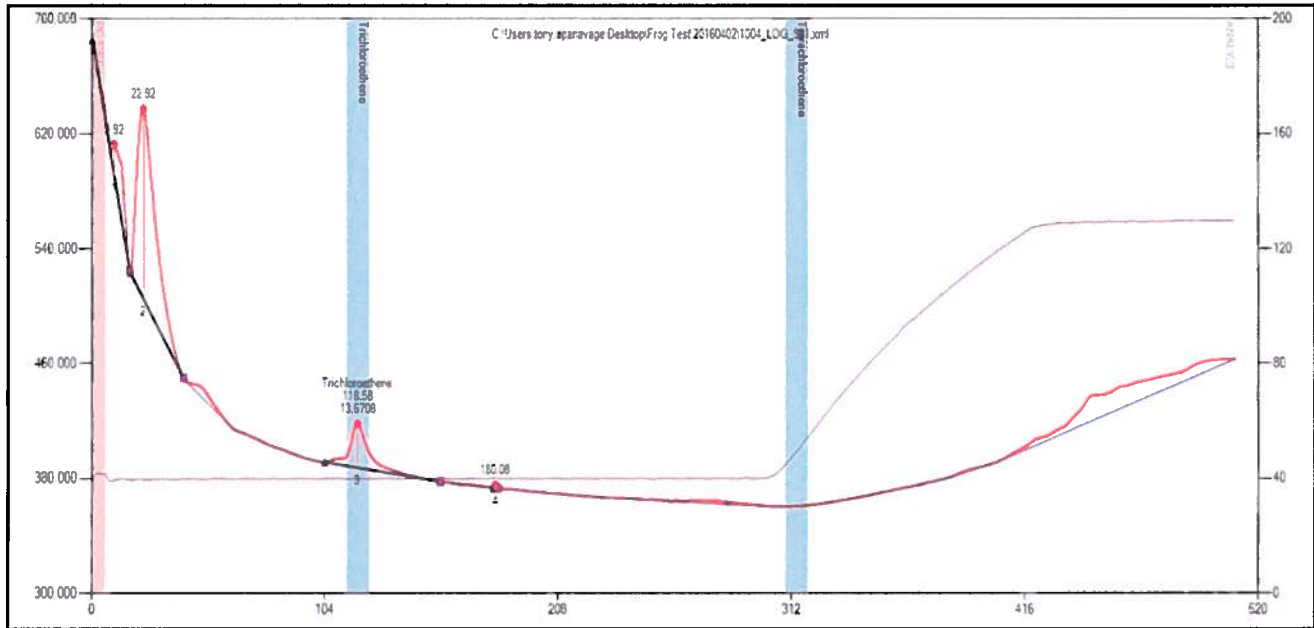
C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_980.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.17			140960	39220
2		23.08			34934642	2581321
3		212.25			40151	3790
4		372.25			77989	9606
5		387.75			37826	4199
6		503.67			1064526	3979



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 PRESETTLE=4, SETTLE=2, FIRE=6  
 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_981.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			236141	21910
2		22.92			1282845	131782
3	Trichloroethene	118.58	13.6708	13.6708	305230	30631
4		180.08			2030	2156

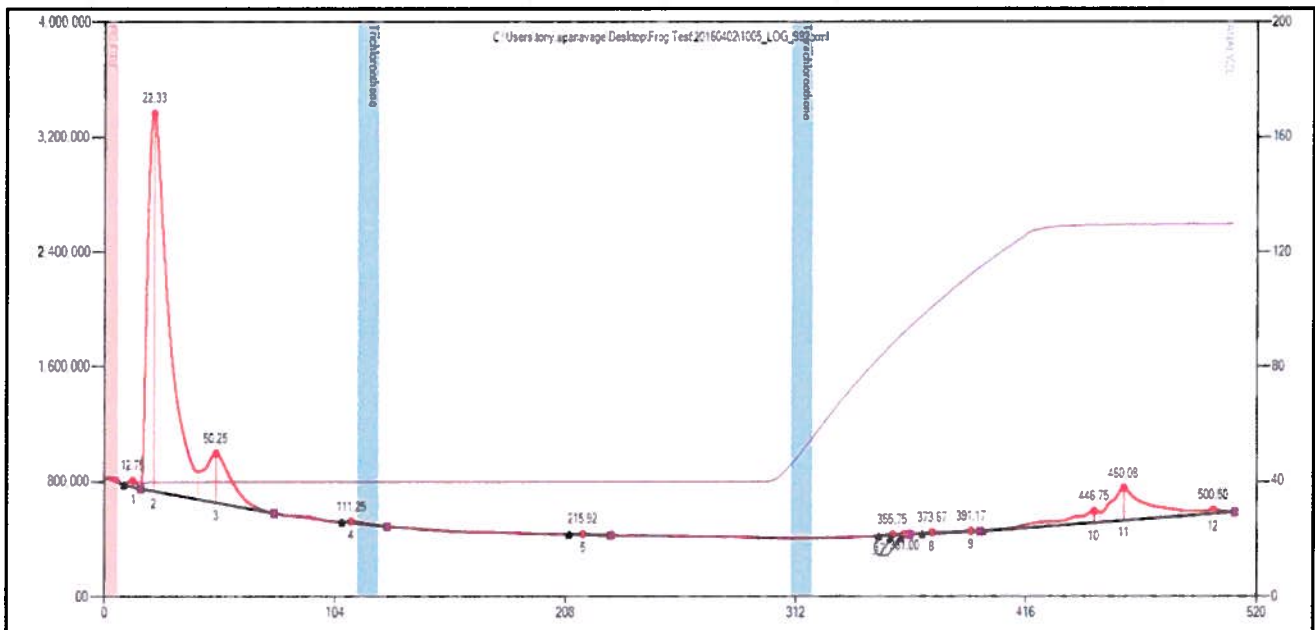


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**Dilution = 1.0**

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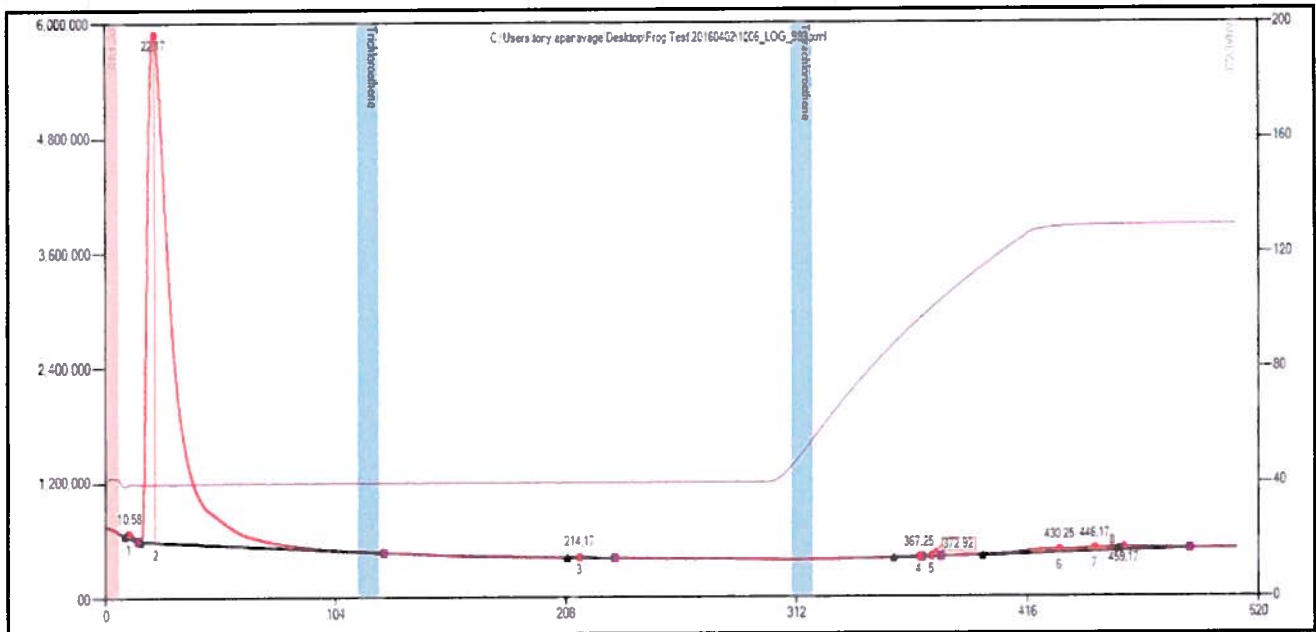
Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.75			199946	43481
2		22.33			28524647	2629427
3		50.25			4911939	343024
4		111.25			112708	8114
5		215.92			37836	4069
6		355.75			29123	5584
7		361			18328	3438
8		373.67			33592	7198
9		391.17			62631	4745
10		446.75			1507028	79856
11		460.08			4315889	226451
12		500.5			273981	23402





**FROG-0033:Ta=300, Tb=90, Tc=120, Ct=40, Ht=130, COLLECT=60, CLEAN=4,  
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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_983.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.58			140284	36752
2		22.17			68801927	5297341
3		214.17			28709	3168
4		367.25			19241	688
5		372.92			20423	4781
6		430.25			686300	30410
7		446.17			480859	35311
8		459.17			770703	35001

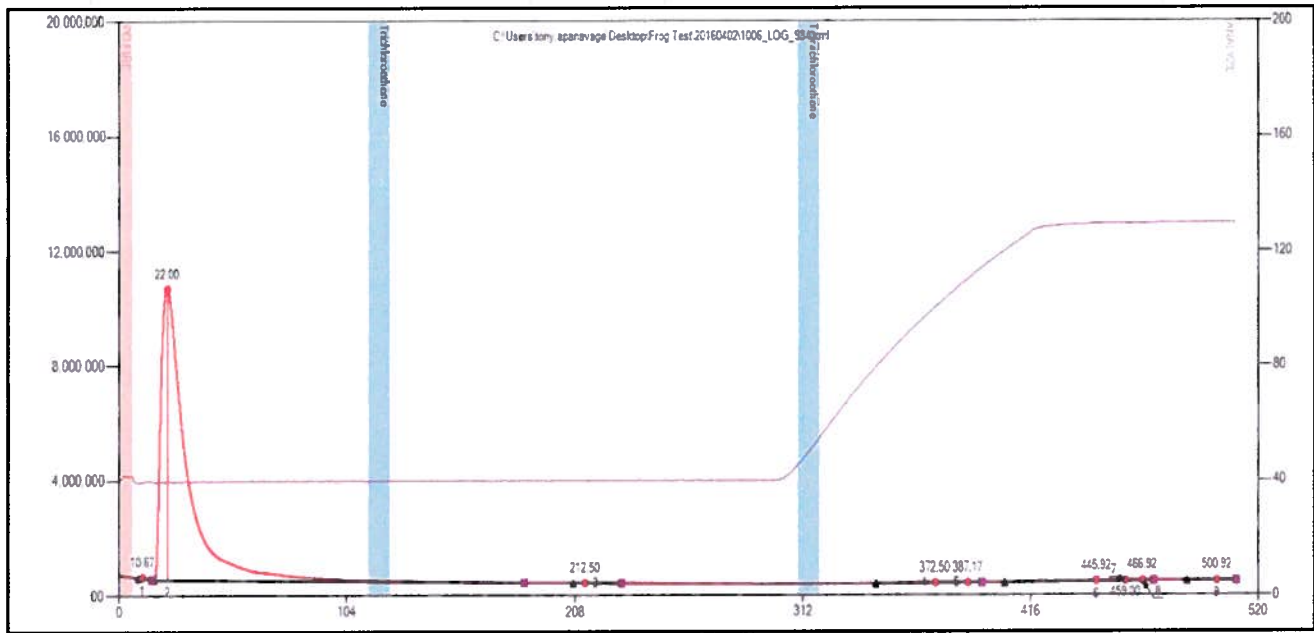


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 PRESETTLE=4, SETTLE=2, FIRE=6

Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_984.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.67			150433	40454
2		22			138224836	10118017
3		212.5			37710	3992
4		372.5			89545	9573
5		387.17			37135	4509
6		445.92			624614	20116
7		459			128985	12066
8		466.92			45007	5937
9		500.92			18419	2447

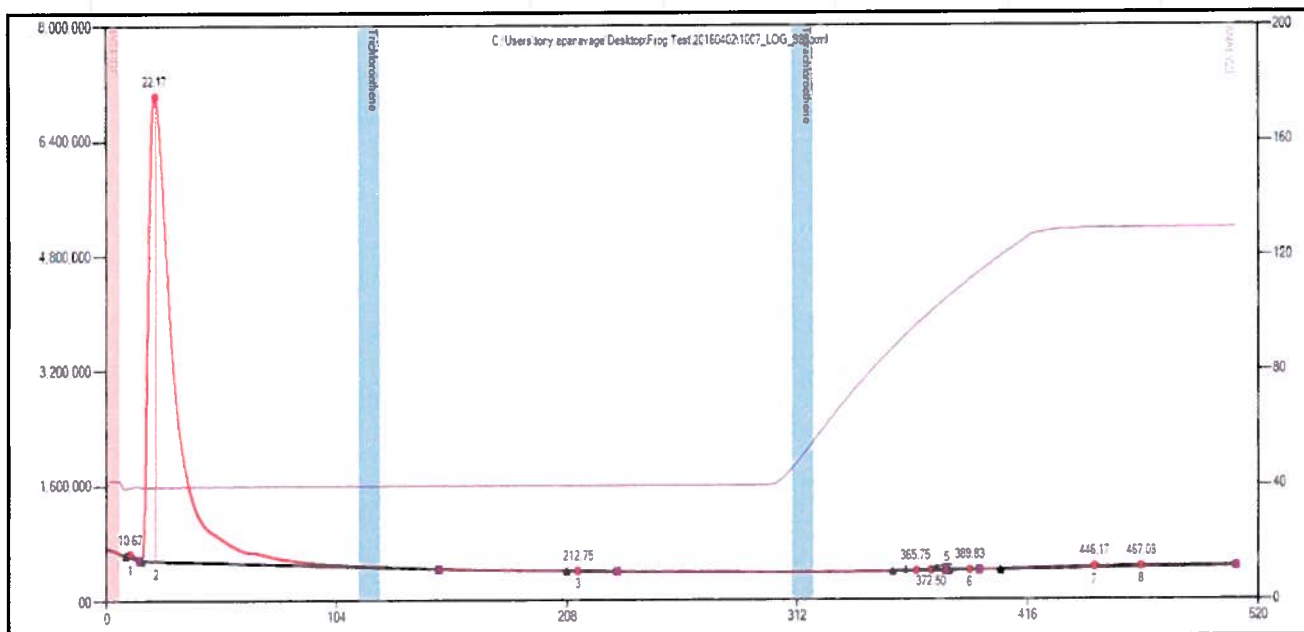


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**Dilution = 1.0**

**C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_985.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10.67			158242	39769
2		22.17			85609382	6467239
3		212.75			26413	2617
4		365.75			22697	1865
5		372.5			33880	6263
6		389.83			22167	2178
7		446.17			646300	23683
8		467.08			676776	17719

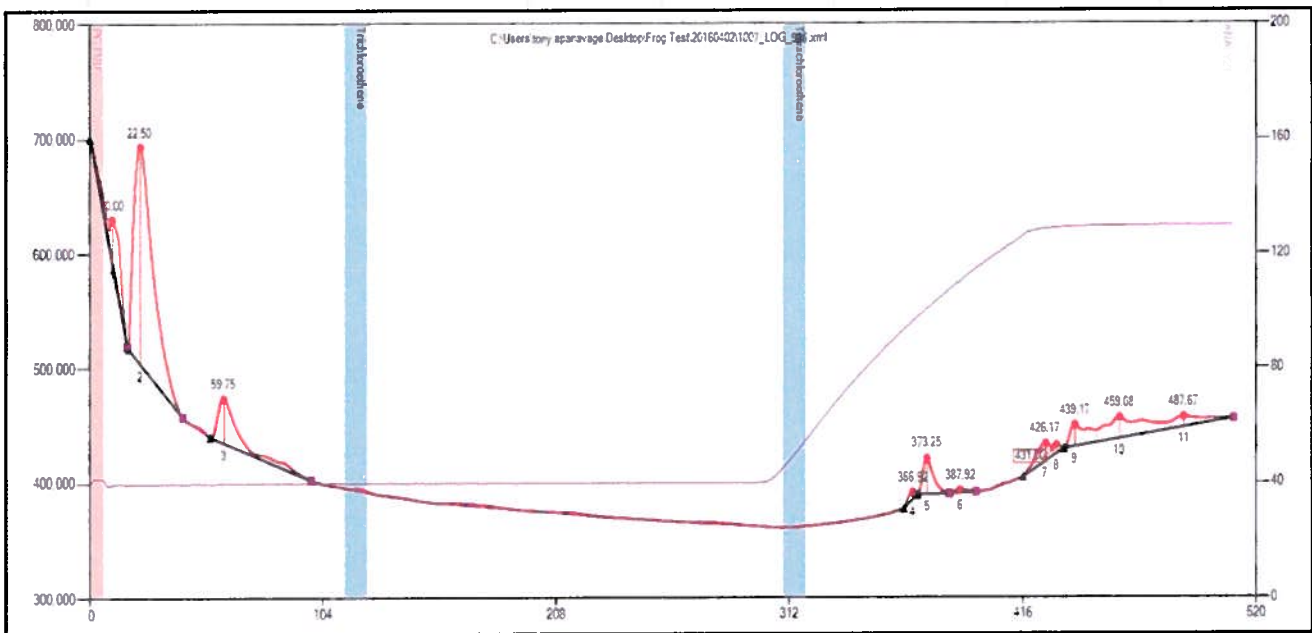


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 PRESETTLE=4, SETTLE=2, FIRE=6**

**Dilution = 1.0**

**C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_986.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		10			335303	37397
2		22.5			1903367	188806
3		59.75			414139	38318
4		366.92			21696	6150
5		373.25			168138	30916
6		387.92			13823	2302
7		426.17			110555	15222
8		431			29923	7307
9		439.17			172653	18860
10		459.08			349683	18385
11		487.67			149336	9158

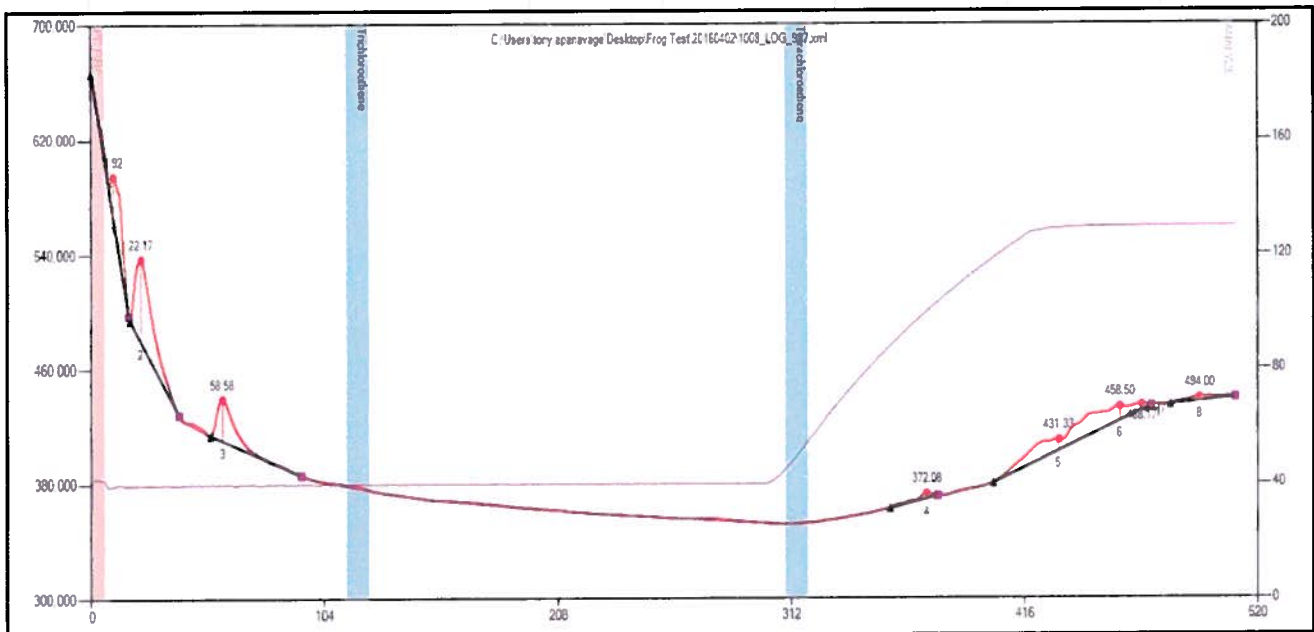


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Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_987.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.92			273662	27999
2		22.17			527146	57368
3		58.58			264104	29030
4		372.08			27335	3712
5		431.33			189821	7513
6		458.5			307086	9873
7		468.17			43995	3649
8		494			34765	2310

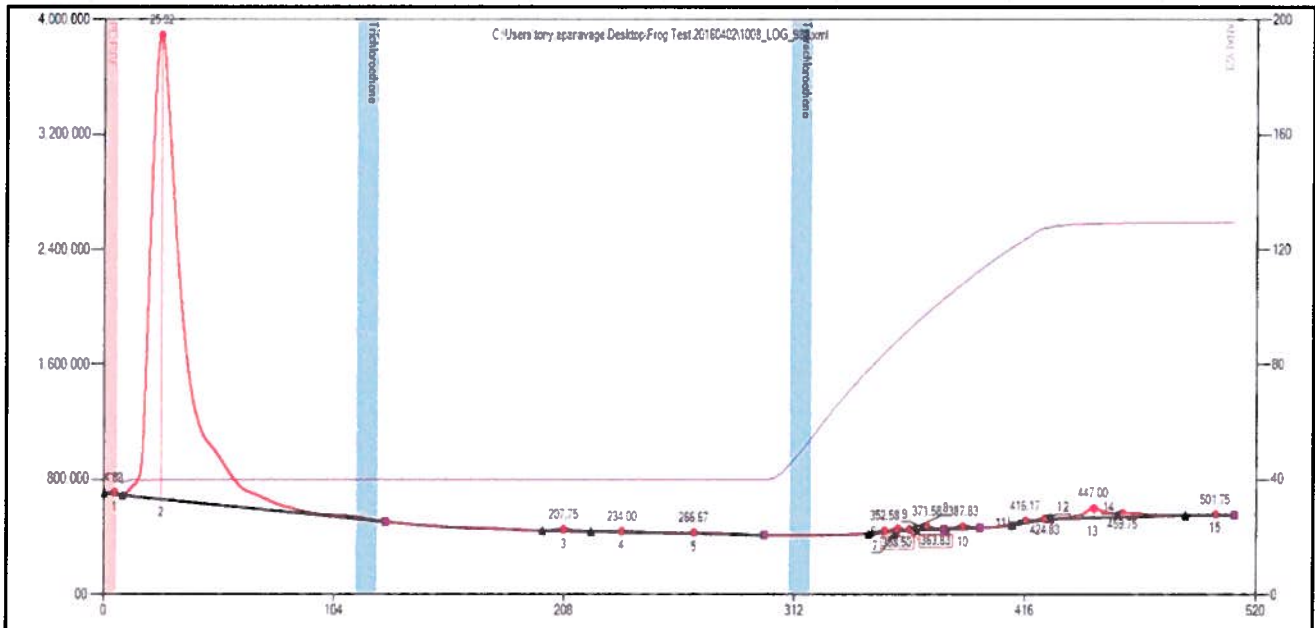


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Dilution = 1.0

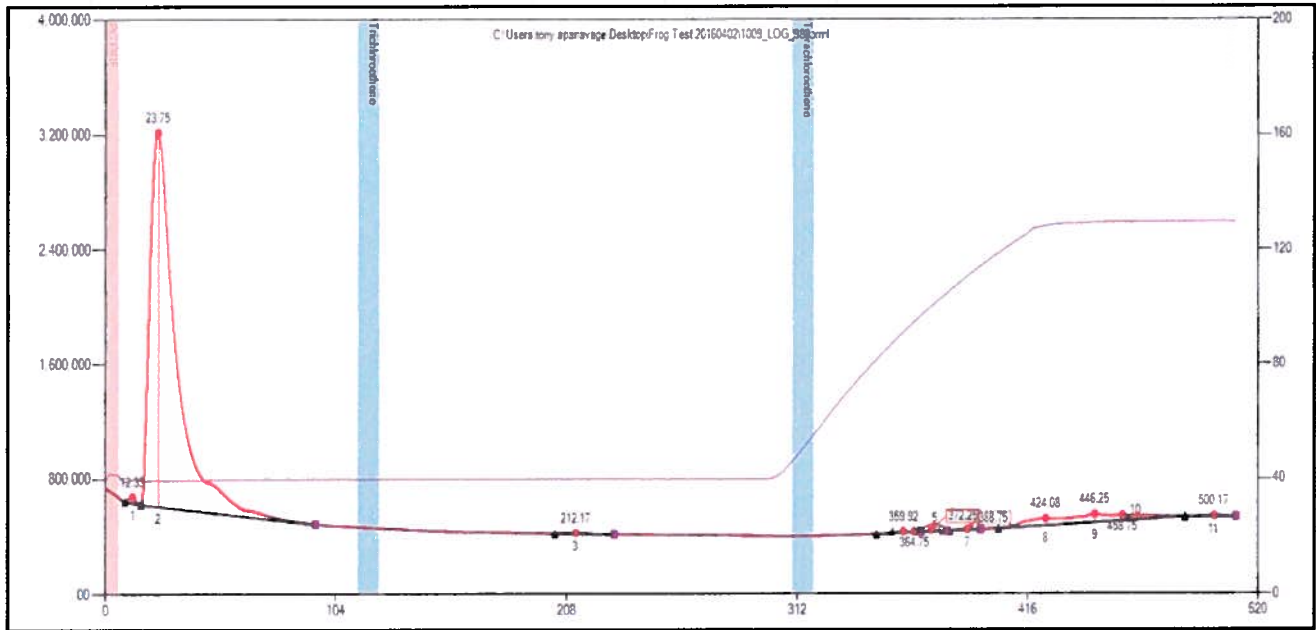
C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_988.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		4.83			59088	13891
2		25.92			54773185	3228655
3		207.75			103106	10960
4		234			109960	6108
5		266.67			174453	8084
6		352.58			56080	11604
7		358.5			113019	18854
8		363.83			29302	7558
9		371.58			120127	22959
10		387.83			101994	12732
11		416.17			71654	15751
12		424.83			71833	5863
13		447			750441	66571
14		459.75			452924	29344
15		501.75			76306	6698



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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_989.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.33			142730	43246
2		23.75			35133664	2605426
3		212.17			67785	6957
4		359.92			48478	9330
5		364.75			12342	3419
6		372.25			54462	10646
7		388.75			46324	5846
8		424.08			695712	48326
9		446.25			1191674	57185
10		458.75			662683	37745
11		500.17			52454	4791

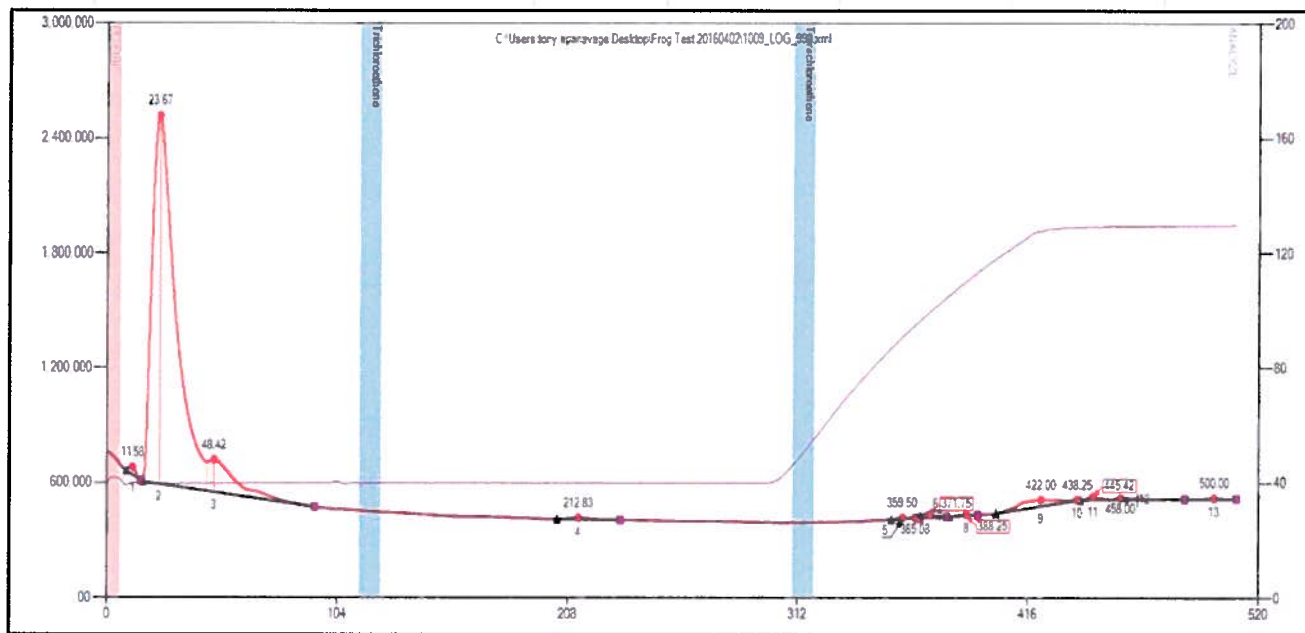


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**Dilution = 1.0**

**C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_990.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.58			142559	41902
2		23.67			23629266	1922217
3		48.42			2478488	169393
4		212.83			86724	8581
5		359.5			25198	5766
6		365.08			9470	1913
7		371.75			58602	11356
8		388.25			36324	4449
9		422			652907	33956
10		438.25			21612	3197
11		445.42			108403	14873
12		458			121583	8056
13		500			43266	4493



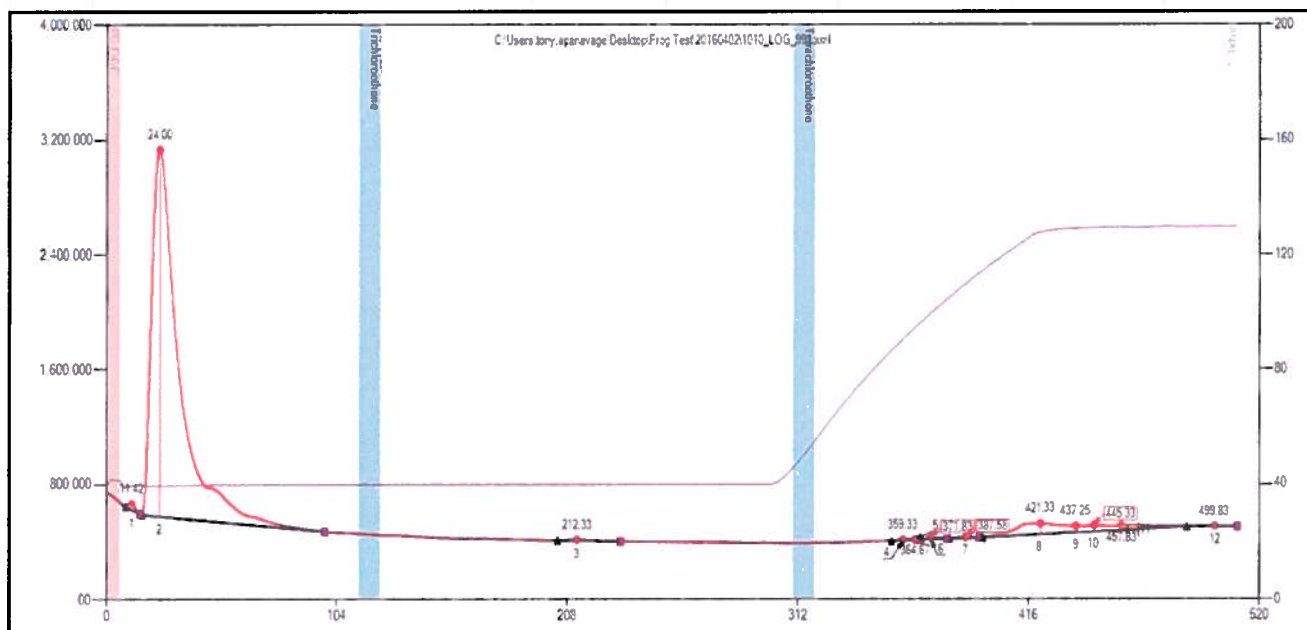


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Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_991.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.42			145134	41030
2		24			35996542	2554487
3		212.33			72630	7314
4		359.33			24364	5705
5		364.67			9936	2063
6		371.83			47938	9244
7		387.58			34753	4722
8		421.33			1797553	75060
9		437.25			251651	46066
10		445.33			501610	44687
11		457.83			561522	30869
12		499.83			30174	3519

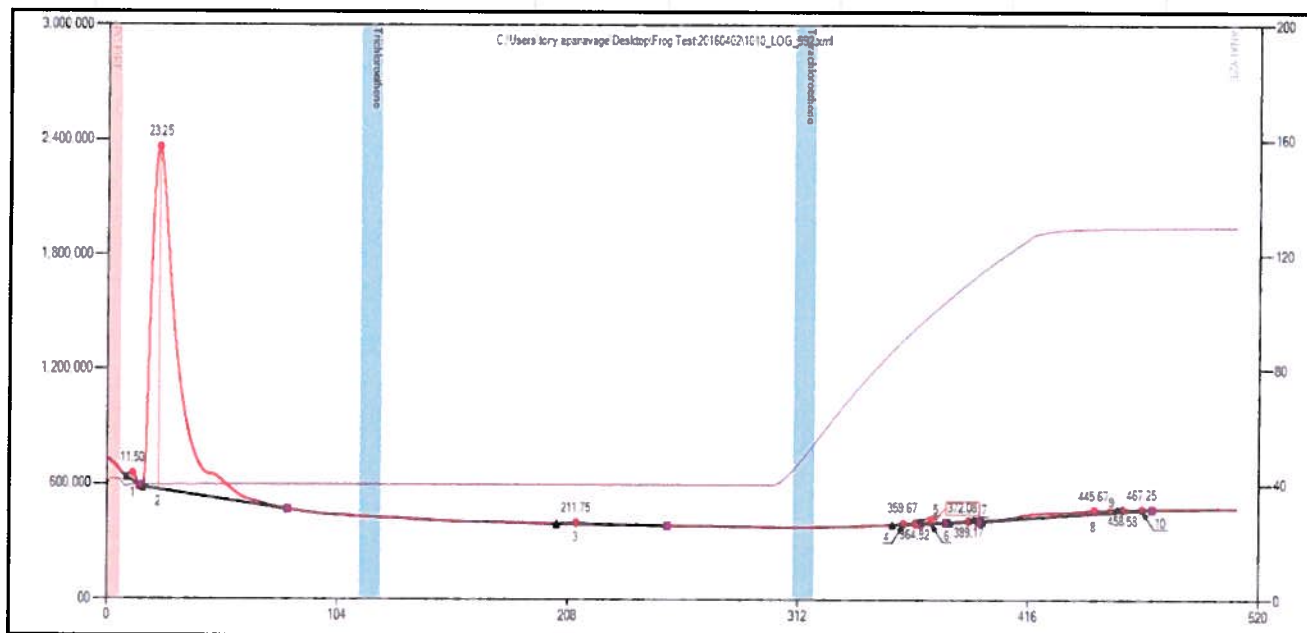


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Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_992.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.5			137095	40295
2		23.25			23344286	1790540
3		211.75			67207	5875
4		359.67			16040	3665
5		364.92			6811	1497
6		372.08			33528	6554
7		389.17			25584	2834
8		445.67			672360	18181
9		458.58			82936	10010
10		467.25			40026	4493

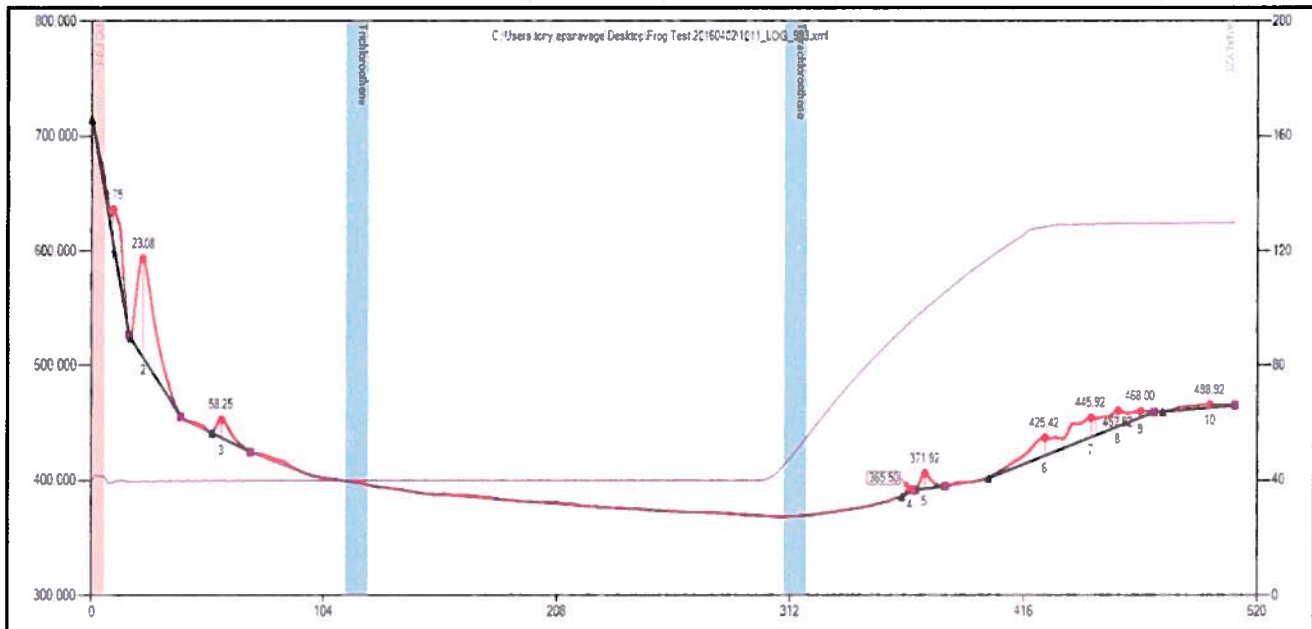


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**Dilution = 1.0**

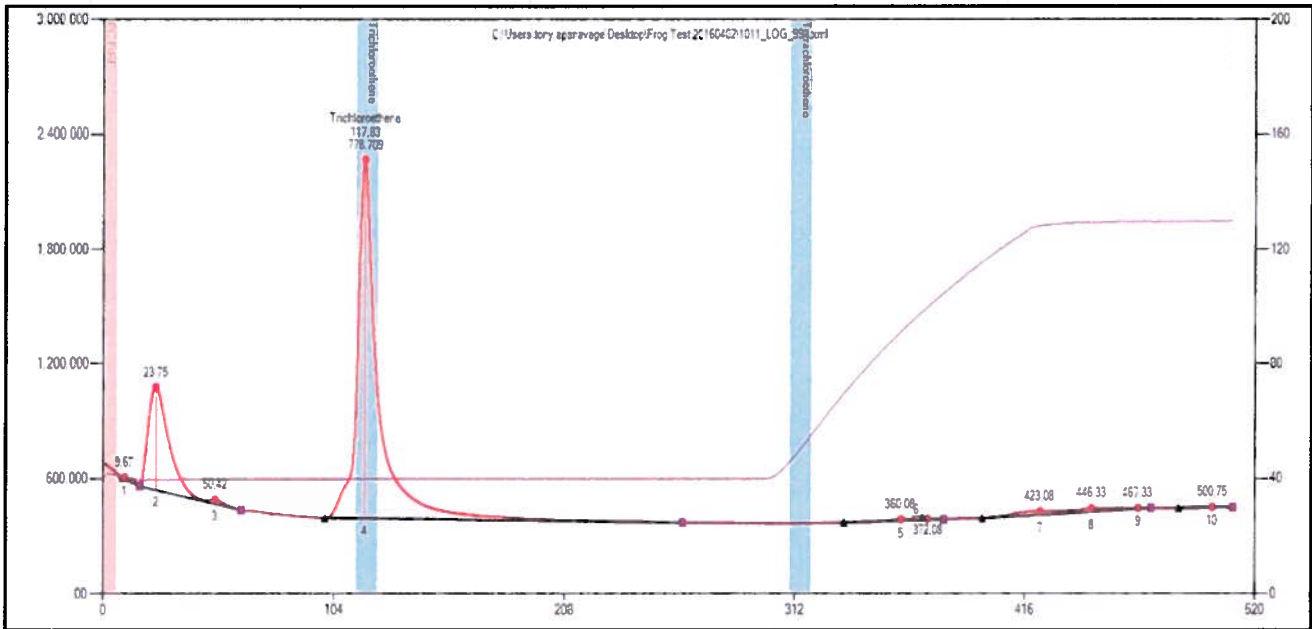
**C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_993.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.75			311939	29769
2		23.08			825038	86529
3		58.25			117467	15821
4		365.5			9640	2816
5		371.92			73214	13546
6		425.42			263100	15712
7		445.92			226116	16910
8		457.92			178416	13807
9		468			52289	5510
10		498.92			49659	2294



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 Dilution = 1.0  
 C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_994.LOG**

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		9.67			86033	9268
2		23.75			5780075	537288
3		50.42			163458	24090
4	Trichloroethene	117.83	778.709	778.709	20366456	1873327
5		360.08			54735	7021
6		372.08			52700	4545
7		423.08			306547	17411
8		446.33			327915	16888
9		467.33			111458	4459
10		500.75			28725	2161

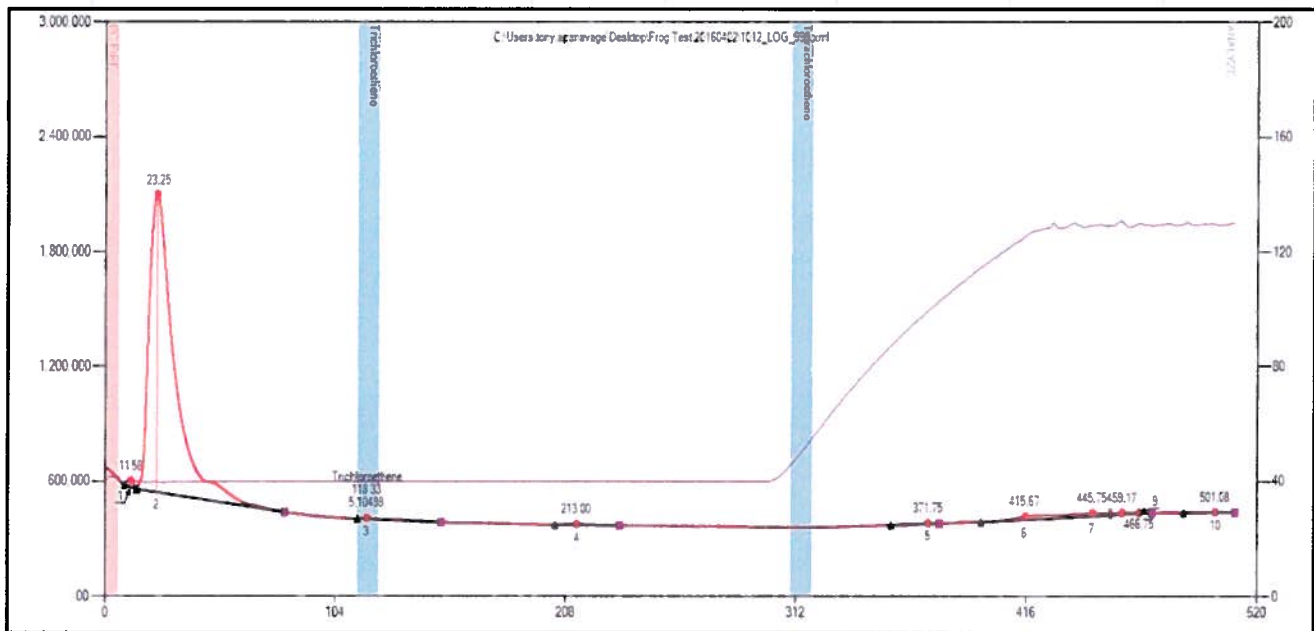


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Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_995.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		11.58			107389	33443
2		23.25			20381763	1557743
3	Trichloroethene	118.33	5.10498	5.10498	80612	5405
4		213			50127	4627
5		371.75			27750	3723
6		415.67			98109	15909
7		445.75			518591	15684
8		459.17			80693	8923
9		466.75			35423	4383
10		501.08			21273	2243

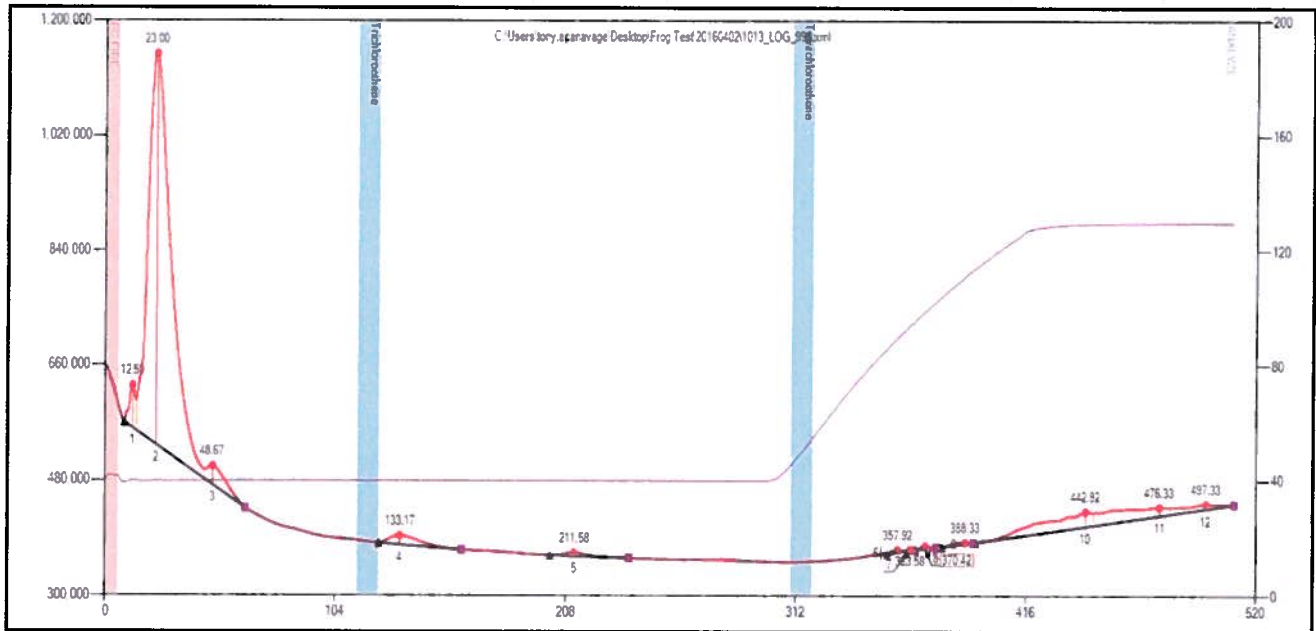


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Dilution = 1.0

C:\Users\tony.apanavage\Desktop\Frog Test\LOG\_996.LOG

Peak	Analyte Name	Time	Concentration	x Dilution	Area	Height
1		12.5			210314	66361
2		23			7363323	611884
3		48.67			305927	29707
4		133.17			219966	14173
5		211.58			58055	5136
6		357.92			15608	3577
7		363.58			4979	984
8		370.42			19034	4069
9		388.33			24595	2105
10		442.92			654342	22988
11		476.33			554370	12980
12		497.33			170954	6985



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## **APPENDIX C—PORTABLE GC/MS-SURVEY PHOTOGRAPHIC LOG**

**PORTABLE GC/MS SURVEY  
PHOTOGRAPHIC LOG**





**Photo 1 – Sump pit (SP2) with 384 parts per billion (ppb) and 778 ppb TCE using the Frog 4000™.**



**Photo 2 – Possible sanitary grate with previous 16 ppb trichloroethene (TCE) hit during first HAPSITE™ survey. Recent Frog 4000™ survey TCE detections were 9.69 ppb and 13.67 ppb with cover open, 9.82 ppb in the breathing zone, and 5.10 ppb when covered.**



**Photo 3 – Sump pit near column D24 with 170 ppb detection for trichloroethene using the Frog 4000™.**



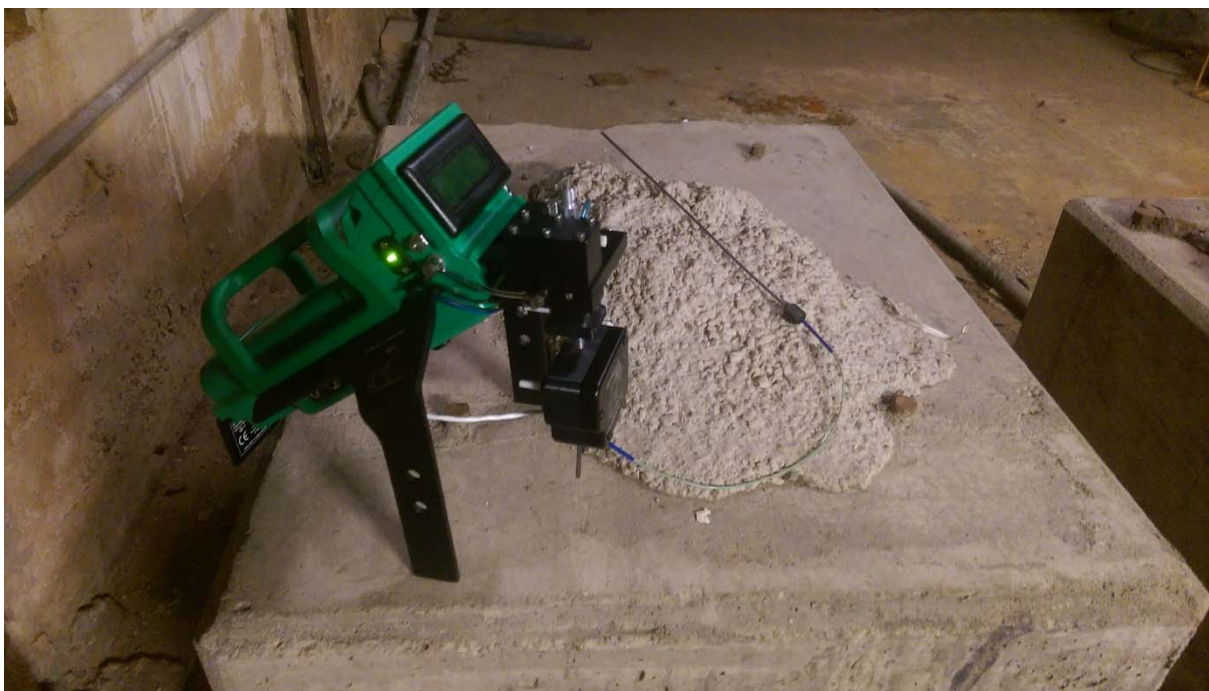
**Photo 4 – Large cover plate (CP) with 92.11 ppb detection of trichloroethene using the Frog 4000™ .**



**Photo 5 – Covered floor drain near column D24 with 131.5 ppb detection of trichloroethene using the Frog 4000™ .**



**Photo 6 – Broad view of three features (cover plate, sump pit, and floor drain) with elevated trichloroethene detections using the Frog 4000™ near column D24.**



**Photo 7 – Photo of Frog 4000™ portable GC/MS unit used to conduct survey.**

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## APPENDIX D—DATA-VALIDATION REPORT



Notes

The following samples were analyzed for VOCs at dilution, resulting in elevated detection limits for nondetected compounds:

<u>Sample</u>	<u>Dilution</u>
SV-168-A	30.37
SV-169-A	3.57
SV-171-A	3.47
SV-173-A	13.56
SV-175-A	125.78

1,1,1-Trichloroethane was detected in a laboratory method blank at the following maximum concentrations:

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
1,1,1-Trichloroethane <sup>(1)</sup>	0.0136 ppb	0.068
1,1,1-Trichloroethane <sup>(1)</sup>	0.0743 µg/m <sup>3</sup>	0.3715

1 – Affecting all samples, except SV-169-A and SV-173-A.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Dilution factor, if applicable, was taken into consideration when evaluating for blank contamination. No action was taken as detected results for 1,1,1-trichloroethane were below the blank action level.

All internal standard areas were within ±40% of the standard.

The surrogate spike compound and Laboratory Control Sample (LCS) had Percent Recoveries (%Rs) within the quality control limits.

Twenty-five VOC target compounds were reported for the TO-15 analysis of the samples.

All sample canisters opened to the approximately -30 psig (-26 to -30 psig) and finished at sub-atmospheric pressures as recorded by the lab after sample receipt.

The laboratory provided clean canister blank results in the data package and the clean canister certification blank was free of contaminants.

Non-detected results were reported to the MDL.

**Executive Summary**

**Laboratory Performance:** The continuing calibration for 1,2,4-trichlorobenzene had a %D above the 30% quality control limit.

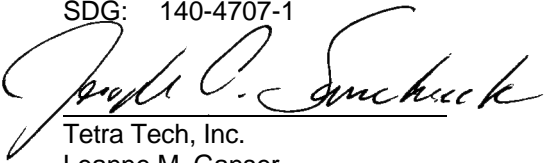
**Other Factors Affecting Data Quality:** Results below the RL were estimated.

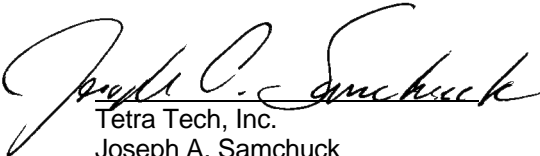
The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (August 2014) and EPA Method TO-15 analytical and reporting protocols. The text of this report has been formulated to address only those areas affecting data quality.



TO: M. MARTIN  
SDG: 140-4707-1

PAGE 3

  
for Tetra Tech, Inc.  
Leanne M. Ganser  
Environmental Scientist/Data Validator

  
Tetra Tech, Inc.  
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 ( $< 2 \times$  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
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

<b>PROJ_NO: 06279</b> <b>SDG: 140-4707-1</b> <b>FRACTION: OV-M3</b> <b>MEDIA: AIR</b>	NSAMPLE	SV-168-A			SV-169-A			SV-170-A			SV-171-A		
	LAB_ID	140-4707-10			140-4707-1			140-4707-2			140-4707-5		
	SAMP_DATE	4/1/2016			4/1/2016			4/1/2016			4/1/2016		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	180	J	P	0.78	U		0.33	U		5.7	U		
1,1,2-TRICHLOROETHANE	140	U		1.4	U		0.57	U		9.9	U		
1,1-DICHLOROETHANE	180	J	P	0.48	U		0.2	U		22	J	P	
1,1-DICHLOROETHENE	16000			0.98	J	P	0.28	U		700			
1,2,3-TRIMETHYLBENZENE	210	U		2	U		0.84	U		14	U		
1,2,4-TRICHLOROBENZENE	370	UJ	C	3.4	U		1.4	UJ	C	25	UJ	C	
1,2,4-TRIMETHYLBENZENE	160	U		3.6	J	P	0.61	U		11	U		
1,2-DICHLOROETHANE	97	U		0.92	U		0.38	U		6.7	U		
1,3,5-TRIMETHYLBENZENE	160	U		1.5	U		0.64	U		11	U		
BENZENE	93	U		1.4	J	P	0.37	U		6.4	U		
CARBON TETRACHLORIDE	120	U		1.1	U		0.47	U		8.2	U		
CHLORODIFLUOROMETHANE	67	U		1.6	J	P	2			4.6	U		
CHLOROFORM	290	J	P	1.2	J	P	0.71	J	P	12	J	P	
CIS-1,2-DICHLOROETHENE	520			1.1	U		0.48	U		100			
DICHLORODIFLUOROMETHANE	170	U		2.1	J	P	2.1			12	U		
ETHYLBENZENE	150	U		3.9	J	P	0.59	U		10	U		
METHYL TERT-BUTYL ETHER	310	U		2.9	U		1.2	U		21	U		
METHYLENE CHLORIDE	570	U		5.4	U		2.7	J	P	39	U		
NAPHTHALENE	270	U		2.5	U		1.2			18	U		
TETRACHLOROETHENE	140	U		1.3	U		0.54	U		9.4	U		
TOLUENE	570	U		20			2.3	U		39	U		
TOTAL XYLENES	130	U		23			0.52	U		9	U		
TRANS-1,2-DICHLOROETHENE	100	U		0.94	U		0.4	U		6.9	U		
TRICHLOROETHENE	42000			2.6			0.38	U		2500			
VINYL CHLORIDE	94	U		0.88	U		0.37	U		6.4	U		

<b>PROJ_NO: 06279</b> <b>SDG: 140-4707-1</b> <b>FRACTION: OV-M3</b> <b>MEDIA: AIR</b>	NSAMPLE	SV-172-A			SV-173-A			SV-174-A			SV-175-A		
	LAB_ID	140-4707-3			140-4707-4			140-4707-6			140-4707-7		
	SAMP_DATE	4/1/2016			4/1/2016			4/1/2016			4/1/2016		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.65	U		4.4	U		30			320	J	P	
1,1,2-TRICHLOROETHANE	1.1	U		7.8	U		2.9	U		360	U		
1,1-DICHLOROETHANE	0.4	U		42			8.3			3600			
1,1-DICHLOROETHENE	2.3	J	P	1100			55			29000			
1,2,3-TRIMETHYLBENZENE	1.7	U		11	U		4.2	U		530	U		
1,2,4-TRICHLOROBENZENE	2.9	UJ	C	20	U		7.2	UJ	C	910	UJ	C	
1,2,4-TRIMETHYLBENZENE	2.6	J	P	8.3	U		3.1	U		390	U		
1,2-DICHLOROETHANE	0.77	U		5.2	U		1.9	U		240	U		
1,3,5-TRIMETHYLBENZENE	1.3	U		8.7	U		3.2	U		400	U		
BENZENE	0.8	J	P	5	U		1.8	U		230	U		
CARBON TETRACHLORIDE	0.94	U		6.4	U		2.4	U		300	U		
CHLORODIFLUOROMETHANE	1.9	J	P	3.6	U		1.5	J	P	170	U		
CHLOROFORM	1.4	J	P	14	J	P	9.6			230	U		
CIS-1,2-DICHLOROETHENE	2.7	J	P	170			26			18000			
DICHLORODIFLUOROMETHANE	2.8	J	P	9.1	U		3.3	U		420	U		
ETHYLBENZENE	3.5			7.9	U		2.9	U		370	U		
METHYL TERT-BUTYL ETHER	2.5	U		17	U		6.1	U		770	U		
METHYLENE CHLORIDE	4.5	U		31	U		11	U		1400	U		
NAPHTHALENE	2.1	U		14	U		5.2	U		660	U		
TETRACHLOROETHENE	1.1	U		7.4	U		2.7	U		340	U		
TOLUENE	16			31	U		11	U		1400	U		
TOTAL XYLENES	20			8.3	J	P	2.6	U		330	U		
TRANS-1,2-DICHLOROETHENE	0.79	U		7.7	J	P	2	U		1900			
TRICHLOROETHENE	45			5100			580						
VINYL CHLORIDE	0.74	U		5	U		1.9	U		230	U		

<b>PROJ_NO: 06279</b> <b>SDG: 140-4707-1</b> <b>FRACTION: OV-M3</b> <b>MEDIA: AIR</b>	NSAMPLE	SV-175-A-DL			SV-176-A			SV-177-A			SV-DUP-A		
	LAB_ID	140-4707-7			140-4707-8			140-4707-9			140-4707-11		
	SAMP_DATE	4/1/2016			4/1/2016			4/1/2016			4/1/2016		
	QC_TYPE	NM			NM			NM			FD		
	UNITS	UG/M3			UG/M3			UG/M3			UG/M3		
	PCT_SOLIDS												
	DUP_OF										SV-174-A		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE				0.33	U		0.33	U		36			
1,1,2-TRICHLOROETHANE				0.57	U		0.57	U		5.2	U		
1,1-DICHLOROETHANE				0.2	U		0.2	U		9.4	J	P	
1,1-DICHLOROETHENE				0.36	J	P	0.28	U		71			
1,2,3-TRIMETHYLBENZENE				0.87	J	P	0.84	U		7.6	U		
1,2,4-TRICHLOROBENZENE				1.4	UJ	C	1.4	UJ	C	13	UJ	C	
1,2,4-TRIMETHYLBENZENE				2.5			0.88	J	P	5.6	U		
1,2-DICHLOROETHANE				0.38	U		0.38	U		3.5	U		
1,3,5-TRIMETHYLBENZENE				0.88	J	P	0.64	U		5.8	U		
BENZENE				1	J	P	0.88	J	P	3.3	U		
CARBON TETRACHLORIDE				0.47	U		0.47	U		4.3	U		
CHLORODIFLUOROMETHANE				7.3			3.7			2.4	U		
CHLOROFORM				0.37	U		2			11	J	P	
CIS-1,2-DICHLOROETHENE				0.48	U		0.48	U		31			
DICHLORODIFLUOROMETHANE				2.2			1.9	J	P	6.1	U		
ETHYLBENZENE				4			1.6	J	P	5.3	U		
METHYL TERT-BUTYL ETHER				1.2	U		1.2	U		11	U		
METHYLENE CHLORIDE				2.3	U		3.9			21	U		
NAPHTHALENE				1	U		1	U		9.5	U		
TETRACHLOROETHENE				0.69	J	P	0.54	U		4.9	U		
TOLUENE				16			7.1			21	U		
TOTAL XYLENES				25			11			4.7	U		
TRANS-1,2-DICHLOROETHENE				0.4	U		0.4	U		3.6	U		
TRICHLOROETHENE		460000		1.6	J	Q	26			840			
VINYL CHLORIDE				0.37	U		0.37	U		3.4	U		

**Appendix B**

Results as Reported by the Laboratory

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-168-A Lab Sample ID: 140-4707-10  
 Matrix: Air Lab File ID: GD06P113.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:43  
 Sample wt/vol: 12 (mL) Date Analyzed: 04/07/2016 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 30.37  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		320	93
56-23-5	Carbon tetrachloride	153.81	ND		640	120
75-45-6	Chlorodifluoromethane	86.47	ND		360	67
67-66-3	Chloroform	119.38	290	J	490	93
156-59-2	cis-1,2-Dichloroethene	96.94	520		400	120
75-71-8	Dichlorodifluoromethane	120.91	ND		500	170
75-34-3	1,1-Dichloroethane	98.96	180	J	410	51
107-06-2	1,2-Dichloroethane	98.96	ND		410	97
75-35-4	1,1-Dichloroethene	96.94	16000		400	70
100-41-4	Ethylbenzene	106.17	ND		440	150
75-09-2	Methylene Chloride	84.93	ND		880	570
1634-04-4	Methyl tert-butyl ether	88.15	ND		1800	310
91-20-3	Naphthalene	128.17	ND		270	270
127-18-4	Tetrachloroethene	165.83	ND		690	140
108-88-3	Toluene	92.14	ND		570	570
156-60-5	trans-1,2-Dichloroethene	96.94	ND		400	100
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		750	370
71-55-6	1,1,1-Trichloroethane	133.41	180	J B	550	83
79-00-5	1,1,2-Trichloroethane	133.41	ND		550	140
79-01-6	Trichloroethene	131.39	42000		270	95
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		500	210
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		500	160
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		500	160
75-01-4	Vinyl chloride	62.50	ND		130	94
1330-20-7	Xylenes, Total	106.17	ND		880	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-169-A Lab Sample ID: 140-4707-1  
 Matrix: Air Lab File ID: RD07P112.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:14  
 Sample wt/vol: 150 (mL) Date Analyzed: 04/08/2016 02:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 3.57  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	1.4	J	3.0	0.87
56-23-5	Carbon tetrachloride	153.81	ND		6.0	1.1
75-45-6	Chlorodifluoromethane	86.47	1.6	J	3.4	0.63
67-66-3	Chloroform	119.38	1.2	J	4.6	0.87
156-59-2	cis-1,2-Dichloroethene	96.94	ND		3.8	1.1
75-71-8	Dichlorodifluoromethane	120.91	2.1	J	4.7	1.6
75-34-3	1,1-Dichloroethane	98.96	ND		3.9	0.48
107-06-2	1,2-Dichloroethane	98.96	ND		3.9	0.92
75-35-4	1,1-Dichloroethene	96.94	0.98	J	3.8	0.66
100-41-4	Ethylbenzene	106.17	3.9	J	4.1	1.4
75-09-2	Methylene Chloride	84.93	ND		8.3	5.4
1634-04-4	Methyl tert-butyl ether	88.15	ND		17	2.9
91-20-3	Naphthalene	128.17	ND		2.5	2.5
127-18-4	Tetrachloroethene	165.83	ND		6.5	1.3
108-88-3	Toluene	92.14	20		5.4	5.4
156-60-5	trans-1,2-Dichloroethene	96.94	ND		3.8	0.94
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		7.1	3.4
71-55-6	1,1,1-Trichloroethane	133.41	ND		5.2	0.78
79-00-5	1,1,2-Trichloroethane	133.41	ND		5.2	1.4
79-01-6	Trichloroethene	131.39	2.6		2.6	0.90
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		4.7	2.0
95-63-6	1,2,4-Trimethylbenzene	120.20	3.6	J	4.7	1.5
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		4.7	1.5
75-01-4	Vinyl chloride	62.50	ND		1.2	0.88
1330-20-7	Xylenes, Total	106.17	23		8.3	1.2

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-170-A Lab Sample ID: 140-4707-2  
 Matrix: Air Lab File ID: GD06P105.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:16  
 Sample wt/vol: 100(mL) Date Analyzed: 04/06/2016 18:07  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		1.3	0.37
56-23-5	Carbon tetrachloride	153.81	ND		2.5	0.47
75-45-6	Chlorodifluoromethane	86.47	2.0		1.4	0.27
67-66-3	Chloroform	119.38	0.71	J	2.0	0.37
156-59-2	cis-1,2-Dichloroethene	96.94	ND		1.6	0.48
75-71-8	Dichlorodifluoromethane	120.91	2.1		2.0	0.67
75-34-3	1,1-Dichloroethane	98.96	ND		1.6	0.20
107-06-2	1,2-Dichloroethane	98.96	ND		1.6	0.38
75-35-4	1,1-Dichloroethene	96.94	ND		1.6	0.28
100-41-4	Ethylbenzene	106.17	ND		1.7	0.59
75-09-2	Methylene Chloride	84.93	2.7	J	3.5	2.3
1634-04-4	Methyl tert-butyl ether	88.15	ND		7.2	1.2
91-20-3	Naphthalene	128.17	1.2		1.0	1.0
127-18-4	Tetrachloroethene	165.83	ND		2.7	0.54
108-88-3	Toluene	92.14	ND		2.3	2.3
156-60-5	trans-1,2-Dichloroethene	96.94	ND		1.6	0.40
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		3.0	1.4
71-55-6	1,1,1-Trichloroethane	133.41	ND		2.2	0.33
79-00-5	1,1,2-Trichloroethane	133.41	ND		2.2	0.57
79-01-6	Trichloroethene	131.39	ND		1.1	0.38
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		2.0	0.84
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		2.0	0.61
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		2.0	0.64
75-01-4	Vinyl chloride	62.50	ND		0.51	0.37
1330-20-7	Xylenes, Total	106.17	ND		3.5	0.52

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-171-A Lab Sample ID: 140-4707-5  
 Matrix: Air Lab File ID: GD06P108.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:23  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 20:13  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 3.47  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		22	6.4
56-23-5	Carbon tetrachloride	153.81	ND		44	8.2
75-45-6	Chlorodifluoromethane	86.47	ND		25	4.6
67-66-3	Chloroform	119.38	12	J	34	6.4
156-59-2	cis-1,2-Dichloroethene	96.94	100		28	8.3
75-71-8	Dichlorodifluoromethane	120.91	ND		34	12
75-34-3	1,1-Dichloroethane	98.96	22	J	28	3.5
107-06-2	1,2-Dichloroethane	98.96	ND		28	6.7
75-35-4	1,1-Dichloroethene	96.94	700		28	4.8
100-41-4	Ethylbenzene	106.17	ND		30	10
75-09-2	Methylene Chloride	84.93	ND		60	39
1634-04-4	Methyl tert-butyl ether	88.15	ND		130	21
91-20-3	Naphthalene	128.17	ND		18	18
127-18-4	Tetrachloroethene	165.83	ND		47	9.4
108-88-3	Toluene	92.14	ND		39	39
156-60-5	trans-1,2-Dichloroethene	96.94	ND		28	6.9
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		52	25
71-55-6	1,1,1-Trichloroethane	133.41	ND		38	5.7
79-00-5	1,1,2-Trichloroethane	133.41	ND		38	9.9
79-01-6	Trichloroethene	131.39	2500		19	6.5
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		34	14
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		34	11
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		34	11
75-01-4	Vinyl chloride	62.50	ND		8.9	6.4
1330-20-7	Xylenes, Total	106.17	ND		60	9.0

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-172-A Lab Sample ID: 140-4707-3  
 Matrix: Air Lab File ID: RD08P108.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:18  
 Sample wt/vol: 50 (mL) Date Analyzed: 04/08/2016 22:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.80	J	2.6	0.73
56-23-5	Carbon tetrachloride	153.81	ND		5.0	0.94
75-45-6	Chlorodifluoromethane	86.47	1.9	J	2.8	0.53
67-66-3	Chloroform	119.38	1.4	J	3.9	0.73
156-59-2	cis-1,2-Dichloroethene	96.94	2.7	J	3.2	0.95
75-71-8	Dichlorodifluoromethane	120.91	2.8	J	4.0	1.3
75-34-3	1,1-Dichloroethane	98.96	ND		3.2	0.40
107-06-2	1,2-Dichloroethane	98.96	ND		3.2	0.77
75-35-4	1,1-Dichloroethene	96.94	2.3	J	3.2	0.56
100-41-4	Ethylbenzene	106.17	3.5		3.5	1.2
75-09-2	Methylene Chloride	84.93	ND		6.9	4.5
1634-04-4	Methyl tert-butyl ether	88.15	ND		14	2.5
91-20-3	Naphthalene	128.17	ND		2.1	2.1
127-18-4	Tetrachloroethene	165.83	ND		5.4	1.1
108-88-3	Toluene	92.14	16		4.5	4.5
156-60-5	trans-1,2-Dichloroethene	96.94	ND		3.2	0.79
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		5.9	2.9
71-55-6	1,1,1-Trichloroethane	133.41	ND		4.4	0.65
79-00-5	1,1,2-Trichloroethane	133.41	ND		4.4	1.1
79-01-6	Trichloroethene	131.39	45		2.1	0.75
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		3.9	1.7
95-63-6	1,2,4-Trimethylbenzene	120.20	2.6	J	3.9	1.2
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		3.9	1.3
75-01-4	Vinyl chloride	62.50	ND		1.0	0.74
1330-20-7	Xylenes, Total	106.17	20		6.9	1.0

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-173-A Lab Sample ID: 140-4707-4  
 Matrix: Air Lab File ID: RD07P113.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:21  
 Sample wt/vol: 100(mL) Date Analyzed: 04/08/2016 03:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 13.56  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		17	5.0
56-23-5	Carbon tetrachloride	153.81	ND		34	6.4
75-45-6	Chlorodifluoromethane	86.47	ND		19	3.6
67-66-3	Chloroform	119.38	14	J	26	5.0
156-59-2	cis-1,2-Dichloroethene	96.94	170		22	6.5
75-71-8	Dichlorodifluoromethane	120.91	ND		27	9.1
75-34-3	1,1-Dichloroethane	98.96	42		22	2.7
107-06-2	1,2-Dichloroethane	98.96	ND		22	5.2
75-35-4	1,1-Dichloroethene	96.94	1100		22	3.8
100-41-4	Ethylbenzene	106.17	ND		24	7.9
75-09-2	Methylene Chloride	84.93	ND		47	31
1634-04-4	Methyl tert-butyl ether	88.15	ND		98	17
91-20-3	Naphthalene	128.17	ND		14	14
127-18-4	Tetrachloroethene	165.83	ND		37	7.4
108-88-3	Toluene	92.14	ND		31	31
156-60-5	trans-1,2-Dichloroethene	96.94	7.7	J	22	5.4
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		40	20
71-55-6	1,1,1-Trichloroethane	133.41	ND		30	4.4
79-00-5	1,1,2-Trichloroethane	133.41	ND		30	7.8
79-01-6	Trichloroethene	131.39	5100		15	5.1
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		27	11
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		27	8.3
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		27	8.7
75-01-4	Vinyl chloride	62.50	ND		6.9	5.0
1330-20-7	Xylenes, Total	106.17	8.3	J	47	7.1

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

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Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-174-A Lab Sample ID: 140-4707-6  
 Matrix: Air Lab File ID: GD06P109.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:30  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 20:55  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		6.4	1.8
56-23-5	Carbon tetrachloride	153.81	ND		13	2.4
75-45-6	Chlorodifluoromethane	86.47	1.5	J	7.1	1.3
67-66-3	Chloroform	119.38	9.6		9.8	1.8
156-59-2	cis-1,2-Dichloroethene	96.94	26		7.9	2.4
75-71-8	Dichlorodifluoromethane	120.91	ND		9.9	3.3
75-34-3	1,1-Dichloroethane	98.96	8.3		8.1	1.0
107-06-2	1,2-Dichloroethane	98.96	ND		8.1	1.9
75-35-4	1,1-Dichloroethene	96.94	55		7.9	1.4
100-41-4	Ethylbenzene	106.17	ND		8.7	2.9
75-09-2	Methylene Chloride	84.93	ND		17	11
1634-04-4	Methyl tert-butyl ether	88.15	ND		36	6.1
91-20-3	Naphthalene	128.17	ND		5.2	5.2
127-18-4	Tetrachloroethene	165.83	ND		14	2.7
108-88-3	Toluene	92.14	ND		11	11
156-60-5	trans-1,2-Dichloroethene	96.94	ND		7.9	2.0
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		15	7.2
71-55-6	1,1,1-Trichloroethane	133.41	30	B	11	1.6
79-00-5	1,1,2-Trichloroethane	133.41	ND		11	2.9
79-01-6	Trichloroethene	131.39	580		5.4	1.9
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		9.8	4.2
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		9.8	3.1
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		9.8	3.2
75-01-4	Vinyl chloride	62.50	ND		2.6	1.9
1330-20-7	Xylenes, Total	106.17	ND		17	2.6

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-175-A Lab Sample ID: 140-4707-7  
 Matrix: Air Lab File ID: GD06P110.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:25  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 21:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 125.78  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		800	230
56-23-5	Carbon tetrachloride	153.81	ND		1600	300
75-45-6	Chlorodifluoromethane	86.47	ND		890	170
67-66-3	Chloroform	119.38	ND		1200	230
156-59-2	cis-1,2-Dichloroethene	96.94	18000		1000	300
75-71-8	Dichlorodifluoromethane	120.91	ND		1200	420
75-34-3	1,1-Dichloroethane	98.96	3600		1000	130
107-06-2	1,2-Dichloroethane	98.96	ND		1000	240
75-35-4	1,1-Dichloroethene	96.94	29000		1000	170
100-41-4	Ethylbenzene	106.17	ND		1100	370
75-09-2	Methylene Chloride	84.93	ND		2200	1400
1634-04-4	Methyl tert-butyl ether	88.15	ND		4500	770
91-20-3	Naphthalene	128.17	ND		660	660
127-18-4	Tetrachloroethene	165.83	ND		1700	340
108-88-3	Toluene	92.14	ND		1400	1400
156-60-5	trans-1,2-Dichloroethene	96.94	1900		1000	250
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		1900	910
71-55-6	1,1,1-Trichloroethane	133.41	320	J B	1400	210
79-00-5	1,1,2-Trichloroethane	133.41	ND		1400	360
79-01-6	Trichloroethene	131.39	410000	E	680	240
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		1200	530
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		1200	390
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		1200	400
75-01-4	Vinyl chloride	62.50	ND		320	230
1330-20-7	Xylenes, Total	106.17	ND		2200	330

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-175-A DL Lab Sample ID: 140-4707-7 DL  
 Matrix: Air Lab File ID: GD06P110DL.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:25  
 Sample wt/vol: 11 (mL) Date Analyzed: 04/07/2016 10:22  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 125.78  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	131.39	460000		1200	430

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		60-140



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-176-A Lab Sample ID: 140-4707-8  
 Matrix: Air Lab File ID: GD06P111.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:31  
 Sample wt/vol: 100(mL) Date Analyzed: 04/06/2016 22:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	1.0	J	1.3	0.37
56-23-5	Carbon tetrachloride	153.81	ND		2.5	0.47
75-45-6	Chlorodifluoromethane	86.47	7.3		1.4	0.27
67-66-3	Chloroform	119.38	ND		2.0	0.37
156-59-2	cis-1,2-Dichloroethene	96.94	ND		1.6	0.48
75-71-8	Dichlorodifluoromethane	120.91	2.2		2.0	0.67
75-34-3	1,1-Dichloroethane	98.96	ND		1.6	0.20
107-06-2	1,2-Dichloroethane	98.96	ND		1.6	0.38
75-35-4	1,1-Dichloroethene	96.94	0.36	J	1.6	0.28
100-41-4	Ethylbenzene	106.17	4.0		1.7	0.59
75-09-2	Methylene Chloride	84.93	ND		3.5	2.3
1634-04-4	Methyl tert-butyl ether	88.15	ND		7.2	1.2
91-20-3	Naphthalene	128.17	ND		1.0	1.0
127-18-4	Tetrachloroethene	165.83	0.69	J	2.7	0.54
108-88-3	Toluene	92.14	16		2.3	2.3
156-60-5	trans-1,2-Dichloroethene	96.94	ND		1.6	0.40
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		3.0	1.4
71-55-6	1,1,1-Trichloroethane	133.41	ND		2.2	0.33
79-00-5	1,1,2-Trichloroethane	133.41	ND		2.2	0.57
79-01-6	Trichloroethene	131.39	1.6		1.1	0.38
526-73-8	1,2,3-Trimethylbenzene	120.19	0.87	J	2.0	0.84
95-63-6	1,2,4-Trimethylbenzene	120.20	2.5		2.0	0.61
108-67-8	1,3,5-Trimethylbenzene	120.20	0.88	J	2.0	0.64
75-01-4	Vinyl chloride	62.50	ND		0.51	0.37
1330-20-7	Xylenes, Total	106.17	25		3.5	0.52

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	106		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-177-A Lab Sample ID: 140-4707-9  
 Matrix: Air Lab File ID: RD08P109.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:33  
 Sample wt/vol: 100(mL) Date Analyzed: 04/08/2016 23:33  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.88	J	1.3	0.37
56-23-5	Carbon tetrachloride	153.81	ND		2.5	0.47
75-45-6	Chlorodifluoromethane	86.47	3.7		1.4	0.27
67-66-3	Chloroform	119.38	2.0		2.0	0.37
156-59-2	cis-1,2-Dichloroethene	96.94	ND		1.6	0.48
75-71-8	Dichlorodifluoromethane	120.91	1.9	J	2.0	0.67
75-34-3	1,1-Dichloroethane	98.96	ND		1.6	0.20
107-06-2	1,2-Dichloroethane	98.96	ND		1.6	0.38
75-35-4	1,1-Dichloroethene	96.94	ND		1.6	0.28
100-41-4	Ethylbenzene	106.17	1.6	J	1.7	0.59
75-09-2	Methylene Chloride	84.93	3.9		3.5	2.3
1634-04-4	Methyl tert-butyl ether	88.15	ND		7.2	1.2
91-20-3	Naphthalene	128.17	ND		1.0	1.0
127-18-4	Tetrachloroethene	165.83	ND		2.7	0.54
108-88-3	Toluene	92.14	7.1		2.3	2.3
156-60-5	trans-1,2-Dichloroethene	96.94	ND		1.6	0.40
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		3.0	1.4
71-55-6	1,1,1-Trichloroethane	133.41	ND		2.2	0.33
79-00-5	1,1,2-Trichloroethane	133.41	ND		2.2	0.57
79-01-6	Trichloroethene	131.39	26		1.1	0.38
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		2.0	0.84
95-63-6	1,2,4-Trimethylbenzene	120.20	0.88	J	2.0	0.61
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		2.0	0.64
75-01-4	Vinyl chloride	62.50	ND		0.51	0.37
1330-20-7	Xylenes, Total	106.17	11		3.5	0.52

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-DUP-A Lab Sample ID: 140-4707-11  
 Matrix: Air Lab File ID: GD06P114.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 00:00  
 Sample wt/vol: 11 (mL) Date Analyzed: 04/07/2016 01:09  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		12	3.3
56-23-5	Carbon tetrachloride	153.81	ND		23	4.3
75-45-6	Chlorodifluoromethane	86.47	ND		13	2.4
67-66-3	Chloroform	119.38	11	J	18	3.3
156-59-2	cis-1,2-Dichloroethene	96.94	31		14	4.3
75-71-8	Dichlorodifluoromethane	120.91	ND		18	6.1
75-34-3	1,1-Dichloroethane	98.96	9.4	J	15	1.8
107-06-2	1,2-Dichloroethane	98.96	ND		15	3.5
75-35-4	1,1-Dichloroethene	96.94	71		14	2.5
100-41-4	Ethylbenzene	106.17	ND		16	5.3
75-09-2	Methylene Chloride	84.93	ND		32	21
1634-04-4	Methyl tert-butyl ether	88.15	ND		66	11
91-20-3	Naphthalene	128.17	ND		9.5	9.5
127-18-4	Tetrachloroethene	165.83	ND		25	4.9
108-88-3	Toluene	92.14	ND		21	21
156-60-5	trans-1,2-Dichloroethene	96.94	ND		14	3.6
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		27	13
71-55-6	1,1,1-Trichloroethane	133.41	36	B	20	3.0
79-00-5	1,1,2-Trichloroethane	133.41	ND		20	5.2
79-01-6	Trichloroethene	131.39	840		9.8	3.4
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		18	7.6
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		18	5.6
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		18	5.8
75-01-4	Vinyl chloride	62.50	ND		4.6	3.4
1330-20-7	Xylenes, Total	106.17	ND		32	4.7

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

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Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-168-A Lab Sample ID: 140-4707-10  
 Matrix: Air Lab File ID: GD06P113.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:43  
 Sample wt/vol: 12 (mL) Date Analyzed: 04/07/2016 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 30.37  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		100	29
56-23-5	Carbon tetrachloride	153.81	ND		100	19
75-45-6	Chlorodifluoromethane	86.47	ND		100	19
67-66-3	Chloroform	119.38	59	J	100	19
156-59-2	cis-1,2-Dichloroethene	96.94	130		100	30
75-71-8	Dichlorodifluoromethane	120.91	ND		100	34
75-34-3	1,1-Dichloroethane	98.96	45	J	100	13
107-06-2	1,2-Dichloroethane	98.96	ND		100	24
75-35-4	1,1-Dichloroethene	96.94	4000		100	18
100-41-4	Ethylbenzene	106.17	ND		100	34
75-09-2	Methylene Chloride	84.93	ND		250	160
1634-04-4	Methyl tert-butyl ether	88.15	ND		510	86
91-20-3	Naphthalene	128.17	ND		51	51
127-18-4	Tetrachloroethene	165.83	ND		100	20
108-88-3	Toluene	92.14	ND		150	150
156-60-5	trans-1,2-Dichloroethene	96.94	ND		100	25
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		100	49
71-55-6	1,1,1-Trichloroethane	133.41	33	J B	100	15
79-00-5	1,1,2-Trichloroethane	133.41	ND		100	27
79-01-6	Trichloroethene	131.39	7800		51	18
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		100	43
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		100	32
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		100	33
75-01-4	Vinyl chloride	62.50	ND		51	37
1330-20-7	Xylenes, Total	106.17	ND		200	30

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-169-A Lab Sample ID: 140-4707-1  
 Matrix: Air Lab File ID: RD07P112.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:14  
 Sample wt/vol: 150 (mL) Date Analyzed: 04/08/2016 02:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 3.57  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.43	J	0.95	0.27
56-23-5	Carbon tetrachloride	153.81	ND		0.95	0.18
75-45-6	Chlorodifluoromethane	86.47	0.47	J	0.95	0.18
67-66-3	Chloroform	119.38	0.25	J	0.95	0.18
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.95	0.29
75-71-8	Dichlorodifluoromethane	120.91	0.43	J	0.95	0.32
75-34-3	1,1-Dichloroethane	98.96	ND		0.95	0.12
107-06-2	1,2-Dichloroethane	98.96	ND		0.95	0.23
75-35-4	1,1-Dichloroethene	96.94	0.25	J	0.95	0.17
100-41-4	Ethylbenzene	106.17	0.90	J	0.95	0.32
75-09-2	Methylene Chloride	84.93	ND		2.4	1.5
1634-04-4	Methyl tert-butyl ether	88.15	ND		4.8	0.81
91-20-3	Naphthalene	128.17	ND		0.48	0.48
127-18-4	Tetrachloroethene	165.83	ND		0.95	0.19
108-88-3	Toluene	92.14	5.4		1.4	1.4
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.95	0.24
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.95	0.46
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.95	0.14
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.95	0.25
79-01-6	Trichloroethene	131.39	0.48		0.48	0.17
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.95	0.40
95-63-6	1,2,4-Trimethylbenzene	120.20	0.73	J	0.95	0.30
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.95	0.31
75-01-4	Vinyl chloride	62.50	ND		0.48	0.35
1330-20-7	Xylenes, Total	106.17	5.3		1.9	0.29

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-170-A Lab Sample ID: 140-4707-2  
 Matrix: Air Lab File ID: GD06P105.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:16  
 Sample wt/vol: 100(mL) Date Analyzed: 04/06/2016 18:07  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.40	0.12
56-23-5	Carbon tetrachloride	153.81	ND		0.40	0.075
75-45-6	Chlorodifluoromethane	86.47	0.58		0.40	0.075
67-66-3	Chloroform	119.38	0.14	J	0.40	0.075
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.40	0.12
75-71-8	Dichlorodifluoromethane	120.91	0.43		0.40	0.14
75-34-3	1,1-Dichloroethane	98.96	ND		0.40	0.050
107-06-2	1,2-Dichloroethane	98.96	ND		0.40	0.095
75-35-4	1,1-Dichloroethene	96.94	ND		0.40	0.070
100-41-4	Ethylbenzene	106.17	ND		0.40	0.14
75-09-2	Methylene Chloride	84.93	0.78	J	1.0	0.65
1634-04-4	Methyl tert-butyl ether	88.15	ND		2.0	0.34
91-20-3	Naphthalene	128.17	0.22		0.20	0.20
127-18-4	Tetrachloroethene	165.83	ND		0.40	0.080
108-88-3	Toluene	92.14	ND		0.60	0.60
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.40	0.10
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.40	0.20
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.40	0.060
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.40	0.11
79-01-6	Trichloroethene	131.39	ND		0.20	0.070
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.40	0.13
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.40	0.13
75-01-4	Vinyl chloride	62.50	ND		0.20	0.15
1330-20-7	Xylenes, Total	106.17	ND		0.80	0.12

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-171-A Lab Sample ID: 140-4707-5  
 Matrix: Air Lab File ID: GD06P108.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:23  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 20:13  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 3.47  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		6.9	2.0
56-23-5	Carbon tetrachloride	153.81	ND		6.9	1.3
75-45-6	Chlorodifluoromethane	86.47	ND		6.9	1.3
67-66-3	Chloroform	119.38	2.5	J	6.9	1.3
156-59-2	cis-1,2-Dichloroethene	96.94	26		6.9	2.1
75-71-8	Dichlorodifluoromethane	120.91	ND		6.9	2.3
75-34-3	1,1-Dichloroethane	98.96	5.5	J	6.9	0.87
107-06-2	1,2-Dichloroethane	98.96	ND		6.9	1.6
75-35-4	1,1-Dichloroethene	96.94	180		6.9	1.2
100-41-4	Ethylbenzene	106.17	ND		6.9	2.3
75-09-2	Methylene Chloride	84.93	ND		17	11
1634-04-4	Methyl tert-butyl ether	88.15	ND		35	5.9
91-20-3	Naphthalene	128.17	ND		3.5	3.5
127-18-4	Tetrachloroethene	165.83	ND		6.9	1.4
108-88-3	Toluene	92.14	ND		10	10
156-60-5	trans-1,2-Dichloroethene	96.94	ND		6.9	1.7
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		6.9	3.4
71-55-6	1,1,1-Trichloroethane	133.41	ND		6.9	1.0
79-00-5	1,1,2-Trichloroethane	133.41	ND		6.9	1.8
79-01-6	Trichloroethene	131.39	460		3.5	1.2
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		6.9	2.9
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		6.9	2.2
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		6.9	2.3
75-01-4	Vinyl chloride	62.50	ND		3.5	2.5
1330-20-7	Xylenes, Total	106.17	ND		14	2.1

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-172-A Lab Sample ID: 140-4707-3  
 Matrix: Air Lab File ID: RD08P108.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:18  
 Sample wt/vol: 50 (mL) Date Analyzed: 04/08/2016 22:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.25	J	0.80	0.23
56-23-5	Carbon tetrachloride	153.81	ND		0.80	0.15
75-45-6	Chlorodifluoromethane	86.47	0.54	J	0.80	0.15
67-66-3	Chloroform	119.38	0.29	J	0.80	0.15
156-59-2	cis-1,2-Dichloroethene	96.94	0.67	J	0.80	0.24
75-71-8	Dichlorodifluoromethane	120.91	0.56	J	0.80	0.27
75-34-3	1,1-Dichloroethane	98.96	ND		0.80	0.10
107-06-2	1,2-Dichloroethane	98.96	ND		0.80	0.19
75-35-4	1,1-Dichloroethene	96.94	0.57	J	0.80	0.14
100-41-4	Ethylbenzene	106.17	0.80		0.80	0.27
75-09-2	Methylene Chloride	84.93	ND		2.0	1.3
1634-04-4	Methyl tert-butyl ether	88.15	ND		4.0	0.68
91-20-3	Naphthalene	128.17	ND		0.40	0.40
127-18-4	Tetrachloroethene	165.83	ND		0.80	0.16
108-88-3	Toluene	92.14	4.3		1.2	1.2
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.80	0.20
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.80	0.39
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.80	0.12
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.80	0.21
79-01-6	Trichloroethene	131.39	8.3		0.40	0.14
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.80	0.34
95-63-6	1,2,4-Trimethylbenzene	120.20	0.53	J	0.80	0.25
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.80	0.26
75-01-4	Vinyl chloride	62.50	ND		0.40	0.29
1330-20-7	Xylenes, Total	106.17	4.6		1.6	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-173-A Lab Sample ID: 140-4707-4  
 Matrix: Air Lab File ID: RD07P113.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:21  
 Sample wt/vol: 100(mL) Date Analyzed: 04/08/2016 03:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 13.56  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		5.4	1.6
56-23-5	Carbon tetrachloride	153.81	ND		5.4	1.0
75-45-6	Chlorodifluoromethane	86.47	ND		5.4	1.0
67-66-3	Chloroform	119.38	2.9	J	5.4	1.0
156-59-2	cis-1,2-Dichloroethene	96.94	42		5.4	1.6
75-71-8	Dichlorodifluoromethane	120.91	ND		5.4	1.8
75-34-3	1,1-Dichloroethane	98.96	10		5.4	0.68
107-06-2	1,2-Dichloroethane	98.96	ND		5.4	1.3
75-35-4	1,1-Dichloroethene	96.94	280		5.4	0.95
100-41-4	Ethylbenzene	106.17	ND		5.4	1.8
75-09-2	Methylene Chloride	84.93	ND		14	8.8
1634-04-4	Methyl tert-butyl ether	88.15	ND		27	4.6
91-20-3	Naphthalene	128.17	ND		2.7	2.7
127-18-4	Tetrachloroethene	165.83	ND		5.4	1.1
108-88-3	Toluene	92.14	ND		8.1	8.1
156-60-5	trans-1,2-Dichloroethene	96.94	1.9	J	5.4	1.4
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		5.4	2.6
71-55-6	1,1,1-Trichloroethane	133.41	ND		5.4	0.81
79-00-5	1,1,2-Trichloroethane	133.41	ND		5.4	1.4
79-01-6	Trichloroethene	131.39	950		2.7	0.95
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		5.4	2.3
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		5.4	1.7
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		5.4	1.8
75-01-4	Vinyl chloride	62.50	ND		2.7	2.0
1330-20-7	Xylenes, Total	106.17	1.9	J	11	1.6

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-174-A Lab Sample ID: 140-4707-6  
 Matrix: Air Lab File ID: GD06P109.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:30  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 20:55  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		2.0	0.58
56-23-5	Carbon tetrachloride	153.81	ND		2.0	0.38
75-45-6	Chlorodifluoromethane	86.47	0.41	J	2.0	0.38
67-66-3	Chloroform	119.38	2.0		2.0	0.38
156-59-2	cis-1,2-Dichloroethene	96.94	6.5		2.0	0.60
75-71-8	Dichlorodifluoromethane	120.91	ND		2.0	0.68
75-34-3	1,1-Dichloroethane	98.96	2.1		2.0	0.25
107-06-2	1,2-Dichloroethane	98.96	ND		2.0	0.48
75-35-4	1,1-Dichloroethene	96.94	14		2.0	0.35
100-41-4	Ethylbenzene	106.17	ND		2.0	0.68
75-09-2	Methylene Chloride	84.93	ND		5.0	3.3
1634-04-4	Methyl tert-butyl ether	88.15	ND		10	1.7
91-20-3	Naphthalene	128.17	ND		1.0	1.0
127-18-4	Tetrachloroethene	165.83	ND		2.0	0.40
108-88-3	Toluene	92.14	ND		3.0	3.0
156-60-5	trans-1,2-Dichloroethene	96.94	ND		2.0	0.50
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		2.0	0.98
71-55-6	1,1,1-Trichloroethane	133.41	5.5	B	2.0	0.30
79-00-5	1,1,2-Trichloroethane	133.41	ND		2.0	0.53
79-01-6	Trichloroethene	131.39	110		1.0	0.35
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		2.0	0.85
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		2.0	0.63
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		2.0	0.65
75-01-4	Vinyl chloride	62.50	ND		1.0	0.73
1330-20-7	Xylenes, Total	106.17	ND		4.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-175-A Lab Sample ID: 140-4707-7  
 Matrix: Air Lab File ID: GD06P110.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:25  
 Sample wt/vol: 20 (mL) Date Analyzed: 04/06/2016 21:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 125.78  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		250	72
56-23-5	Carbon tetrachloride	153.81	ND		250	47
75-45-6	Chlorodifluoromethane	86.47	ND		250	47
67-66-3	Chloroform	119.38	ND		250	47
156-59-2	cis-1,2-Dichloroethene	96.94	4600		250	75
75-71-8	Dichlorodifluoromethane	120.91	ND		250	85
75-34-3	1,1-Dichloroethane	98.96	880		250	31
107-06-2	1,2-Dichloroethane	98.96	ND		250	60
75-35-4	1,1-Dichloroethene	96.94	7300		250	44
100-41-4	Ethylbenzene	106.17	ND		250	85
75-09-2	Methylene Chloride	84.93	ND		630	410
1634-04-4	Methyl tert-butyl ether	88.15	ND		1300	210
91-20-3	Naphthalene	128.17	ND		130	130
127-18-4	Tetrachloroethene	165.83	ND		250	50
108-88-3	Toluene	92.14	ND		380	380
156-60-5	trans-1,2-Dichloroethene	96.94	470		250	63
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		250	120
71-55-6	1,1,1-Trichloroethane	133.41	59	J B	250	38
79-00-5	1,1,2-Trichloroethane	133.41	ND		250	66
79-01-6	Trichloroethene	131.39	75000	E	130	44
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		250	110
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		250	79
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		250	82
75-01-4	Vinyl chloride	62.50	ND		130	91
1330-20-7	Xylenes, Total	106.17	ND		500	75

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-175-A DL Lab Sample ID: 140-4707-7 DL  
 Matrix: Air Lab File ID: GD06P110DL.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:25  
 Sample wt/vol: 11 (mL) Date Analyzed: 04/07/2016 10:22  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 125.78  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	131.39	86000		230	80

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-176-A Lab Sample ID: 140-4707-8  
 Matrix: Air Lab File ID: GD06P111.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:31  
 Sample wt/vol: 100(mL) Date Analyzed: 04/06/2016 22:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.32	J	0.40	0.12
56-23-5	Carbon tetrachloride	153.81	ND		0.40	0.075
75-45-6	Chlorodifluoromethane	86.47	2.1		0.40	0.075
67-66-3	Chloroform	119.38	ND		0.40	0.075
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.40	0.12
75-71-8	Dichlorodifluoromethane	120.91	0.44		0.40	0.14
75-34-3	1,1-Dichloroethane	98.96	ND		0.40	0.050
107-06-2	1,2-Dichloroethane	98.96	ND		0.40	0.095
75-35-4	1,1-Dichloroethene	96.94	0.090	J	0.40	0.070
100-41-4	Ethylbenzene	106.17	0.92		0.40	0.14
75-09-2	Methylene Chloride	84.93	ND		1.0	0.65
1634-04-4	Methyl tert-butyl ether	88.15	ND		2.0	0.34
91-20-3	Naphthalene	128.17	ND		0.20	0.20
127-18-4	Tetrachloroethene	165.83	0.10	J	0.40	0.080
108-88-3	Toluene	92.14	4.4		0.60	0.60
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.40	0.10
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.40	0.20
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.40	0.060
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.40	0.11
79-01-6	Trichloroethene	131.39	0.31		0.20	0.070
526-73-8	1,2,3-Trimethylbenzene	120.19	0.18	J	0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	0.51		0.40	0.13
108-67-8	1,3,5-Trimethylbenzene	120.20	0.18	J	0.40	0.13
75-01-4	Vinyl chloride	62.50	ND		0.20	0.15
1330-20-7	Xylenes, Total	106.17	5.8		0.80	0.12

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	106		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-177-A Lab Sample ID: 140-4707-9  
 Matrix: Air Lab File ID: RD08P109.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:33  
 Sample wt/vol: 100(mL) Date Analyzed: 04/08/2016 23:33  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	0.27	J	0.40	0.12
56-23-5	Carbon tetrachloride	153.81	ND		0.40	0.075
75-45-6	Chlorodifluoromethane	86.47	1.0		0.40	0.075
67-66-3	Chloroform	119.38	0.40		0.40	0.075
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.40	0.12
75-71-8	Dichlorodifluoromethane	120.91	0.37	J	0.40	0.14
75-34-3	1,1-Dichloroethane	98.96	ND		0.40	0.050
107-06-2	1,2-Dichloroethane	98.96	ND		0.40	0.095
75-35-4	1,1-Dichloroethene	96.94	ND		0.40	0.070
100-41-4	Ethylbenzene	106.17	0.37	J	0.40	0.14
75-09-2	Methylene Chloride	84.93	1.1		1.0	0.65
1634-04-4	Methyl tert-butyl ether	88.15	ND		2.0	0.34
91-20-3	Naphthalene	128.17	ND		0.20	0.20
127-18-4	Tetrachloroethene	165.83	ND		0.40	0.080
108-88-3	Toluene	92.14	1.9		0.60	0.60
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.40	0.10
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.40	0.20
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.40	0.060
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.40	0.11
79-01-6	Trichloroethene	131.39	4.9		0.20	0.070
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	0.18	J	0.40	0.13
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.40	0.13
75-01-4	Vinyl chloride	62.50	ND		0.20	0.15
1330-20-7	Xylenes, Total	106.17	2.6		0.80	0.12

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-DUP-A Lab Sample ID: 140-4707-11  
 Matrix: Air Lab File ID: GD06P114.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 00:00  
 Sample wt/vol: 11 (mL) Date Analyzed: 04/07/2016 01:09  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		3.6	1.0
56-23-5	Carbon tetrachloride	153.81	ND		3.6	0.68
75-45-6	Chlorodifluoromethane	86.47	ND		3.6	0.68
67-66-3	Chloroform	119.38	2.3	J	3.6	0.68
156-59-2	cis-1,2-Dichloroethene	96.94	7.7		3.6	1.1
75-71-8	Dichlorodifluoromethane	120.91	ND		3.6	1.2
75-34-3	1,1-Dichloroethane	98.96	2.3	J	3.6	0.45
107-06-2	1,2-Dichloroethane	98.96	ND		3.6	0.86
75-35-4	1,1-Dichloroethene	96.94	18		3.6	0.64
100-41-4	Ethylbenzene	106.17	ND		3.6	1.2
75-09-2	Methylene Chloride	84.93	ND		9.1	5.9
1634-04-4	Methyl tert-butyl ether	88.15	ND		18	3.1
91-20-3	Naphthalene	128.17	ND		1.8	1.8
127-18-4	Tetrachloroethene	165.83	ND		3.6	0.73
108-88-3	Toluene	92.14	ND		5.5	5.5
156-60-5	trans-1,2-Dichloroethene	96.94	ND		3.6	0.91
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		3.6	1.8
71-55-6	1,1,1-Trichloroethane	133.41	6.7	B	3.6	0.55
79-00-5	1,1,2-Trichloroethane	133.41	ND		3.6	0.95
79-01-6	Trichloroethene	131.39	160		1.8	0.64
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		3.6	1.5
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		3.6	1.1
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		3.6	1.2
75-01-4	Vinyl chloride	62.50	ND		1.8	1.3
1330-20-7	Xylenes, Total	106.17	ND		7.3	1.1

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

**Appendix C**

Support Documentation



**Job Narrative**  
**140-4707-1**

**Receipt**

The samples were received on 4/4/2016 at 10:00 AM. The samples arrived in good condition and properly preserved.

**Air - GC/MS VOA**

Method(s) TO 15 LL, TO-15: EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

Method(s) TO 15 LL: The continuing calibration verification (CCV) associated with batch 140-4620 exhibited % difference of > 30% for 1,2,4-Trichlorobenzene; however, the results were within the LCS acceptance limits. The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. According to the laboratory standard operating procedure, the continuing calibration is acceptable if it meets the laboratory control sample acceptance criteria.

Method(s) TO 15 LL: The following samples were diluted due to the abundance of non-target analytes: SV-169-A (140-4707-1) and SV-172-A (140-4707-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Comments**

No additional comments.

TAL Knoxville  
5815 Middlebrook Pike  
Knoxville, TN 37921  
phone 865-291-3000 fax 865-584-4315

180325

Canister Samples Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

BALTIMORE

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information		Project Manager: <u>Tony Apanavage</u>		Sampled By: <u>TA</u>		1 of 2 COCs	
Company: <u>TetraTech</u>		Phone: <u>3012338230</u>					
Address: <u>20251 Century Blvd</u>		Site Contact:					
City/State/Zip: <u>Baltimore, MD</u>		TAL Contact:					
Phone: <u>3012338230</u> <u>20874</u>							
FAX: <u>3015283000</u>							
Project Name: <u>BUILDING A VMD</u>		Analysis Turnaround Time: <u>STANDARD</u>					
Site/location: <u>MRC</u>		Standard (Specify):					
PO #		Rush (Specify):					

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-169-A	4/1/16	1207	1314	-28	-3	11272	16494	✓											
SV-170-A		1208	1316	-29	-3	09904	09741	✓											
SV-172-A		1209	1318	-30	-5	10662	10333	✓											
SV-173-A		1210	1321	-26	-2	09704	09797	✓											
SV-171-A		1211	1323	-28	-5	11310	10495	✓											
SV-174-A	✓	1218	1330	-29	0	09912	09788	✓											

Sampled by:	Temperature (Fahrenheit)			Received @ ambient, 1 box Fedex 50, trk# 77602123 5881 No Custody seal, KLW 4/4/16 ambient temp is 20.5°C
	Interior	Ambient		
	Start			
	Stop			
	Pressure (inches of Hg)			
	Interior	Ambient		
	Start			
	Stop			

Special Instructions/QC Requirements & Comments:

Canisters Shipped by: <u>TA</u>	Date/Time: <u>4/1/16 1530</u>	Canisters Received by: <u>KLW</u>
Samples Relinquished by: <u>KLW</u>	Date/Time: <u>4-1-2016 1140</u>	Received by: <u>KLW</u> 4/4/16 1000
Relinquished by:	Date/Time:	Received by:

11 canvs  
11 flow  
1T



140-4707 Chain of Custody

TAL Knoxville  
 5815 Middlebrook Pike  
 Knoxville, TN 37921  
 phone 865-291-3000 fax 865-584-4315

**180325**  
**Canister Samples Chain of Custody Record**

**TestAmerica**  
 THE LEADER IN ENVIRONMENTAL TESTING

**BALTIMORE** TestAmerica assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information		Project Manager: <b>T. APANAVAGE</b>		Sampled By: <b>T. Apanavage 2</b> of <b>2</b> COCs															
Company: <b>TetraTech</b>		Phone: <b>301 233 8230</b>																	
Address: <b>20251 Century Blvd</b>		Site Contact:																	
City/State/Zip: <b>Germanstown, MD</b>		TAL Contact:																	
Phone: <b>301 233 8230</b> <b>20874</b>																			
FAX: <b>301 528 3000</b>																			
Project Name: <b>BUILDING A VMP</b>		Analysis Turnaround Time: <b>STANDARD</b>																	
Site/location: <b>MAC</b>		Standard (Specify):																	
PO #:		Rush (Specify):																	
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
<b>SV-175-A</b>	<b>4/1/16</b>	<b>1212</b>	<b>1325</b>	<b>-29</b>	<b>-2</b>	<b>10647</b>	<b>09666</b>	<b>✓</b>											
<b>SV-176-A</b>	<b> </b>	<b>1220</b>	<b>1331</b>	<b>-30</b>	<b>-1</b>	<b>10625</b>	<b>09636</b>	<b>✓</b>											
<b>SV-177-A</b>	<b> </b>	<b>1221</b>	<b>1333</b>	<b>-30</b>	<b>-1</b>	<b>09913</b>	<b>10962</b>	<b>✓</b>											
<b>SV-168-A</b>	<b> </b>	<b>1230</b>	<b>1343</b>	<b>-28</b>	<b>0</b>	<b>10581</b>	<b>11286</b>	<b>✓</b>											
<b>SV-DVP-A</b>	<b>✓</b>	<b>-</b>	<b>-</b>	<b>-30</b>	<b>0</b>	<b>10592</b>	<b>10920</b>	<b>✓</b>											
Sampled by:		Temperature (Fahrenheit)																	
		Interior		Ambient															
Start																			
Stop																			
		Pressure (inches of Hg)																	
		Interior		Ambient															
Start																			
Stop																			
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by: <b>[Signature]</b>				Date/Time: <b>4/1/16 1530</b>				Canisters Received by: <b>[Signature]</b>											
Samples Relinquished by: <b>[Signature]</b>				Date/Time: <b>4-1-2016 / 1640</b>				Received by: <b>[Signature]</b>				<b>4/4/16 1000</b>							
Relinquished by:				Date/Time:				Received by:											



# Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 140-4707-1

**Login Number: 4707**

**List Source: TestAmerica Knoxville**

**List Number: 1**

**Creator: Wilson, Ken**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	N/A	This is checked in the lab.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

# Method T015 Low Level

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Volatile Organic Compounds - Low  
level (GC/MS) by Method TO 15

# Sample Summary

Client: Tetra Tech, Inc.  
Project/Site: Middle River - MRC Building A VMP

TestAmerica Job ID: 140-4707-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-4707-1	SV-169-A	Air	04/01/16 13:14	04/04/16 10:00
140-4707-2	SV-170-A	Air	04/01/16 13:16	04/04/16 10:00
140-4707-3	SV-172-A	Air	04/01/16 13:18	04/04/16 10:00
140-4707-4	SV-173-A	Air	04/01/16 13:21	04/04/16 10:00
140-4707-5	SV-171-A	Air	04/01/16 13:23	04/04/16 10:00
140-4707-6	SV-174-A	Air	04/01/16 13:30	04/04/16 10:00
140-4707-7	SV-175-A	Air	04/01/16 13:25	04/04/16 10:00
140-4707-8	SV-176-A	Air	04/01/16 13:31	04/04/16 10:00
140-4707-9	SV-177-A	Air	04/01/16 13:33	04/04/16 10:00
140-4707-10	SV-168-A	Air	04/01/16 13:43	04/04/16 10:00
140-4707-11	SV-DUP-A	Air	04/01/16 00:00	04/04/16 10:00

# QC Association Summary

Client: Tetra Tech, Inc.  
Project/Site: Middle River - MRC Building A VMP

TestAmerica Job ID: 140-4707-1

## Air - GC/MS VOA

### Analysis Batch: 4612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-4707-1	SV-169-A	Total/NA	Air	TO 15 LL	
140-4707-4	SV-173-A	Total/NA	Air	TO 15 LL	
LCS 140-4612/1006	Lab Control Sample	Total/NA	Air	TO 15 LL	
MB 140-4612/8	Method Blank	Total/NA	Air	TO 15 LL	

### Analysis Batch: 4613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-4707-3	SV-172-A	Total/NA	Air	TO 15 LL	
140-4707-9	SV-177-A	Total/NA	Air	TO 15 LL	
LCS 140-4613/1002	Lab Control Sample	Total/NA	Air	TO 15 LL	
MB 140-4613/4	Method Blank	Total/NA	Air	TO 15 LL	

### Analysis Batch: 4620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-4707-2	SV-170-A	Total/NA	Air	TO 15 LL	
140-4707-5	SV-171-A	Total/NA	Air	TO 15 LL	
140-4707-6	SV-174-A	Total/NA	Air	TO 15 LL	
140-4707-7	SV-175-A	Total/NA	Air	TO 15 LL	
140-4707-7 - DL	SV-175-A	Total/NA	Air	TO 15 LL	
140-4707-8	SV-176-A	Total/NA	Air	TO 15 LL	
140-4707-10	SV-168-A	Total/NA	Air	TO 15 LL	
140-4707-11	SV-DUP-A	Total/NA	Air	TO 15 LL	
LCS 140-4620/1002	Lab Control Sample	Total/NA	Air	TO 15 LL	
MB 140-4620/7	Method Blank	Total/NA	Air	TO 15 LL	



FORM V  
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: GA07BFB.D BFB Injection Date: 01/07/2016  
 Instrument ID: MG BFB Injection Time: 17:50  
 Analysis Batch No.: 4097

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	17.5	
75	30.0 - 60.0 % of mass 95	46.7	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.6	
173	Less than 2.0 % of mass 174	0.4	(0.5) 1
174	50.0 - 120.00 % of mass 95	91.8	
175	5.0 - 9.0 % of mass 174	6.3	(6.9) 1
176	95.0 - 101.0 % of mass 174	89.0	(97.0) 1
177	5.0 - 9.0 % of mass 176	5.7	(6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 140-4097/2	GA07ICL1.D	01/07/2016	19:02
	IC 140-4097/3	GA07ICL2.D	01/07/2016	19:45
	IC 140-4097/4	GA07ICL3.D	01/07/2016	20:28
	IC 140-4097/5	GA07ICL4.D	01/07/2016	21:11
	IC 140-4097/6	GA07ICL5.D	01/07/2016	21:53
	ICIS 140-4097/7	GA07ICL6.D	01/07/2016	22:35
	IC 140-4097/8	GA07ICL7.D	01/07/2016	23:17
	IC 140-4097/9	GA07ICL8.D	01/08/2016	00:01
	IC 140-4097/10	GA07ICL9.D	01/08/2016	00:44
	ICV 140-4097/12	GA07ICV.D	01/08/2016	02:07

FORM V  
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: GBFBD05C.D BFB Injection Date: 04/06/2016  
 Instrument ID: MG BFB Injection Time: 11:30  
 Analysis Batch No.: 4620

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0 % of mass 95	19.1
75	30.0 - 60.0 % of mass 95	55.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0 % of mass 95	7.4
173	Less than 2.0 % of mass 174	0.4 (0.5) 1
174	50.0 - 120.00 % of mass 95	78.9
175	5.0 - 9.0 % of mass 174	5.5 (7.0) 1
176	95.0 - 101.0 % of mass 174	76.7 (97.3) 1
177	5.0 - 9.0 % of mass 176	5.0 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 140-4620/2	GCCVD05C.D	04/06/2016	12:02
	LCS 140-4620/1002	GCCVD05C-LCS .d	04/06/2016	12:02
	MB 140-4620/7	500BLKD06.D	04/06/2016	16:42
SV-170-A	140-4707-2	GD06P105.D	04/06/2016	18:07
SV-171-A	140-4707-5	GD06P108.D	04/06/2016	20:13
SV-174-A	140-4707-6	GD06P109.D	04/06/2016	20:55
SV-175-A	140-4707-7	GD06P110.D	04/06/2016	21:37
SV-176-A	140-4707-8	GD06P111.D	04/06/2016	22:19
SV-168-A	140-4707-10	GD06P113.D	04/07/2016	00:27
SV-DUP-A	140-4707-11	GD06P114.D	04/07/2016	01:09
SV-175-A DL	140-4707-7 DL	GD06P110DL.D	04/07/2016	10:22

FORM V  
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: RBFBJ29.D BFB Injection Date: 10/29/2015  
 Instrument ID: MR BFB Injection Time: 12:53  
 Analysis Batch No.: 3621

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	19.8	
75	30.0 - 60.0 % of mass 95	47.7	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.8	
173	Less than 2.0 % of mass 174	0.3	(0.5) 1
174	50.0 - 120.00 % of mass 95	75.7	
175	5.0 - 9.0 % of mass 174	5.5	(7.2) 1
176	95.0 - 101.0 % of mass 174	73.7	(97.4) 1
177	5.0 - 9.0 % of mass 176	4.8	(6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 140-3621/2	RJ29IC01.D	10/29/2015	14:14
	IC 140-3621/3	RJ29IC02.D	10/29/2015	15:07
	IC 140-3621/4	RJ29IC03.D	10/29/2015	15:58
	IC 140-3621/5	RJ29IC04.D	10/29/2015	16:50
	IC 140-3621/6	RJ29IC05.D	10/29/2015	17:41
	ICIS 140-3621/7	RJ29ICIS06.D	10/29/2015	18:33
	IC 140-3621/8	RJ29IC07.D	10/29/2015	19:26
	IC 140-3621/9	RJ29IC08.D	10/29/2015	20:18
	IC 140-3621/10	RJ29IC09.D	10/29/2015	21:11
	ICV 140-3621/12	RJ29ICV.D	10/29/2015	22:54

FORM V  
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: RBFBD07.D BFB Injection Date: 04/07/2016  
 Instrument ID: MR BFB Injection Time: 10:16  
 Analysis Batch No.: 4612

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0 % of mass 95	21.9
75	30.0 - 60.0 % of mass 95	49.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0 % of mass 95	7.0
173	Less than 2.0 % of mass 174	0.3 (0.5) 1
174	50.0 - 120.00 % of mass 95	73.8
175	5.0 - 9.0 % of mass 174	5.4 (7.3) 1
176	95.0 - 101.0 % of mass 174	73.3 (99.4) 1
177	5.0 - 9.0 % of mass 176	4.7 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 140-4612/6	RCCVD07.D	04/07/2016	10:48
	LCS 140-4612/1006	RCCVD07-LCS. d	04/07/2016	10:48
	MB 140-4612/8	R500MLD07.D	04/07/2016	12:36
SV-169-A	140-4707-1	RD07P112.D	04/08/2016	02:48
SV-173-A	140-4707-4	RD07P113.D	04/08/2016	03:40

FORM V  
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: RBFBD08.D BFB Injection Date: 04/08/2016  
 Instrument ID: MR BFB Injection Time: 10:14  
 Analysis Batch No.: 4613

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0 % of mass 95	21.6
75	30.0 - 60.0 % of mass 95	49.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0 % of mass 95	6.9
173	Less than 2.0 % of mass 174	0.3 (0.5) 1
174	50.0 - 120.00 % of mass 95	74.5
175	5.0 - 9.0 % of mass 174	5.3 (7.2) 1
176	95.0 - 101.0 % of mass 174	74.2 (99.5) 1
177	5.0 - 9.0 % of mass 176	4.8 (6.5) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 140-4613/2	RCCVD08.D	04/08/2016	10:46
	LCS 140-4613/1002	RCCVD08-LCS. d	04/08/2016	10:46
	MB 140-4613/4	R500MLD08.D	04/08/2016	12:40
SV-172-A	140-4707-3	RD08P108.D	04/08/2016	22:40
SV-177-A	140-4707-9	RD08P109.D	04/08/2016	23:33

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097

SDG No.: \_\_\_\_\_

Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-4097/2	GA07ICL1.D
Level 2	IC 140-4097/3	GA07ICL2.D
Level 3	IC 140-4097/4	GA07ICL3.D
Level 4	IC 140-4097/5	GA07ICL4.D
Level 5	IC 140-4097/6	GA07ICL5.D
Level 6	ICIS 140-4097/7	GA07ICL6.D
Level 7	IC 140-4097/8	GA07ICL7.D
Level 8	IC 140-4097/9	GA07ICL8.D
Level 9	IC 140-4097/10	GA07ICL9.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Chlorodifluoromethane	++++ 0.3394	0.3721 0.3241	0.4172 0.3720	0.3305 0.2837	0.2982	Ave	0.3422				12.7		30.0				
Propene	++++ 1.1510	++++ 1.0456	2.0457 1.1594	1.3803 ++++	1.1085	Ave	1.3151				28.5		30.0				
Dichlorodifluoromethane	++++ 3.6324	3.2605 3.4382	3.9201 3.8997	3.4765 2.9683	3.1373	Ave	3.4666				9.9		30.0				
Chloromethane	++++ 0.3535	++++ 0.3254	0.4379 0.3574	0.3600 0.2658	0.3092	Ave	0.3442				15.5		30.0				
1,2-Dichloro-1,1,2,2-tetrafluoroethane	++++ 2.5046	2.2433 2.3913	2.6169 2.7102	2.3651 2.0716	2.1701	Ave	2.3841				9.2		30.0				
Acetaldehyde	++++ 0.4364	++++ 0.3901	0.6406 0.3249	0.5383 0.3179	0.6536	Ave	0.4717				29.9		30.0				
Vinyl chloride	1.3488 1.2941	1.2302 1.2121	1.4037 1.3269	1.2430 0.9658	1.1287	Ave	1.2392				10.6		30.0				
1,3-Butadiene	++++ 0.9497	0.9443 0.9005	1.0933 0.9743	0.9198 0.7238	0.8460	Ave	0.9190				11.5		30.0				
Butane	++++ 1.8408	1.8651 1.7363	2.0754 1.8899	1.8171 1.4155	1.6678	Ave	1.7885				10.7		30.0				
Bromomethane	++++ 1.2716	1.2911 1.1937	1.3619 1.3285	1.1757 1.0311	1.1101	Ave	1.2204				9.3		30.0				
Chloroethane	++++ 0.6444	0.6164 0.6093	0.7306 0.6610	0.6187 0.5136	0.5632	Ave	0.6197				10.4		30.0				
Ethanol	++++ 0.4495	++++ 0.4064	0.4972 0.3665	0.4355 0.3727	0.4604	Ave	0.4269				11.2		30.0				
Vinyl bromide	++++ 1.2040	1.1144 1.1313	1.2825 1.2346	1.1079 0.9933	1.0462	Ave	1.1393				8.5		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
2-Methylbutane	++++ 1.3095	1.3596 1.2233	1.4365 1.3061	1.2169 1.0428	1.1401	Ave		1.2543			10.0		30.0				
Trichlorofluoromethane	++++ 3.4078	3.1246 3.2344	3.5670 3.5481	3.1868 2.8124	2.9673	Ave		3.2310			8.3		30.0				
Acrolein	++++ 0.2532	++++ 0.2465	0.3084 0.2234	0.2923 0.1920	0.2518	Ave		0.2525			15.5		30.0				
Acetonitrile	++++ 0.4292	++++ 0.3705	++++ 0.2954	0.3975 0.3880	0.4336	Ave		0.3857			13.1		30.0				
Acetone	++++ 0.4756	++++ 0.4212	0.5909 0.3084	0.5249 0.3969	0.7115	Ave		0.4899			27.3		30.0				
Pentane	++++ 0.2261	++++ 0.2089	++++ 0.2256	0.2157 0.1876	0.2021	Ave		0.2110			7.0		30.0				
Isopropyl alcohol	++++ 1.4138	++++ 1.2523	1.4477 1.1546	1.3117 1.1988	1.4261	Ave		1.3150			8.9		30.0				
Ethyl ether	++++ 1.2401	++++ 1.1310	1.2855 1.0193	1.1491 1.1619	1.2088	Ave		1.1708			7.4		30.0				
1,1-Dichloroethene	++++ 1.2979	1.2054 1.2354	1.4250 1.3490	1.2374 1.0830	1.1253	Ave		1.2448			9.0		30.0				
Acrylonitrile	++++ 0.7248	++++ 0.6530	0.7356 0.5562	0.6658 0.6806	0.6850	Ave		0.6716			8.8		30.0				
tert-Butyl alcohol	++++ 2.0600	++++ 1.9045	2.0015 1.9620	1.9181 1.8349	2.0812	Ave		1.9660			4.5		30.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	++++ 2.7120	2.5265 2.5085	2.9224 2.6169	2.5469 2.2190	2.3812	Ave		2.5542			8.2		30.0				
Methylene Chloride	++++ 1.1769	++++ 1.0710	1.7169 1.1019	1.2624 0.9229	1.0804	Ave		1.1904			21.4		30.0				
3-Chloropropene	++++ 1.0980	1.2890 1.0045	1.2517 1.0860	1.0492 0.8867	0.9890	Ave		1.0817			12.4		30.0				
Carbon disulfide	++++ 3.7420	3.6629 3.5541	4.0028 3.8499	3.5591 2.9949	3.2846	Ave		3.5813			8.9		30.0				
trans-1,2-Dichloroethene	++++ 1.3876	1.3279 1.2900	1.4978 1.3085	1.2927 1.1335	1.2097	Ave		1.3060			8.4		30.0				
2-Methylpentane	++++ 2.5076	2.3880 2.3326	2.8442 2.3822	2.3433 1.9902	2.2258	Ave		2.3767			10.2		30.0				
Methyl tert-butyl ether	++++ 3.3783	++++ 3.0582	3.3670 2.5989	3.0865 3.0236	3.3082	Ave		3.1172			8.8		30.0				
1,1-Dichloroethane	++++ 2.2875	2.1447 2.0937	2.4422 2.1056	2.1042 1.9159	1.9917	Ave		2.1357			7.7		30.0				
Vinyl acetate	++++ 2.5625	2.4718 2.4162	2.4167 2.0831	2.2552 2.6962	2.3877	Ave		2.4112			7.7		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097

SDG No.: \_\_\_\_\_

Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
2-Butanone (MEK)	++++ 0.5346	++++ 0.5106	0.5262 0.4277	0.5084 0.5274	0.6169	Ave		0.5217			10.6		30.0				
Hexane	++++ 0.9295	++++ 0.8693	1.0811 0.8775	0.9097 0.7571	0.8144	Ave		0.8912			11.4		30.0				
Isopropyl ether	++++ 3.8331	4.1451 3.4870	3.7503 2.9876	3.4760 3.2877	3.8451	Ave		3.6015			10.1		30.0				
cis-1,2-Dichloroethene	++++ 1.4151	1.3094 1.3027	1.5058 1.3007	1.3097 1.1878	1.2490	Ave		1.3225			7.4		30.0				
Ethyl acetate	1.9429 2.1374	2.0890 2.0037	1.9704 1.6533	1.8172 2.1871	2.0357	Ave		1.9819			8.3		30.0				
Chloroform	++++ 2.7451	2.7313 2.5200	2.9754 2.4828	2.5939 2.3102	2.4616	Ave		2.6025			8.0		30.0				
Tert-butyl ethyl ether	++++ 3.4671	3.5423 3.1393	3.3881 2.7154	3.1439 3.0619	3.4243	Ave		3.2353			8.5		30.0				
Tetrahydrofuran	++++ 1.2205	++++ 1.1169	1.2496 0.9327	1.0967 1.1539	1.1297	Ave		1.1286			9.1		30.0				
1,1,1-Trichloroethane	++++ 3.0610	2.8530 2.8023	3.2565 2.7659	2.8052 2.6149	2.6808	Ave		2.8549			7.3		30.0				
1,2-Dichloroethane	++++ 0.3567	0.3565 0.3497	0.3626 0.3362	0.3485 0.3096	0.3298	Ave		0.3437			5.1		30.0				
1-Butanol	++++ 0.0884	++++ 0.0931	++++ 0.1052	0.0891 0.0792	0.0953	Ave		0.0917			9.4		30.0				
Cyclohexane	++++ 0.1412	++++ 0.1371	0.1731 0.1325	0.1511 0.1057	0.1310	Ave		0.1388			14.8		30.0				
Benzene	++++ 0.7842	0.8737 0.7611	0.8603 0.7171	0.8007 0.6229	0.7379	Ave		0.7697			10.5		30.0				
Carbon tetrachloride	0.6428 0.6686	0.6364 0.6529	0.7216 0.5901	0.6719 0.5660	0.6080	Ave		0.6398			7.3		30.0				
2,3-Dimethylpentane	++++ 0.2049	0.2076 0.1955	0.2270 0.1924	0.2066 0.1593	0.1885	Ave		0.1977			9.9		30.0				
Thiophene	++++ 0.4463	0.4648 0.4405	0.4809 0.4374	0.4470 0.3677	0.4088	Ave		0.4367			8.0		30.0				
Tert-amyl methyl ether	++++ 0.7600	0.8389 0.7231	0.7286 0.6212	0.7184 0.6546	0.7675	Ave		0.7265			9.3		30.0				
2,2,4-Trimethylpentane	++++ 1.2990	1.3659 1.2293	1.4343 1.1750	1.3282 0.9696	1.2152	Ave		1.2521			11.4		30.0				
Heptane	++++ 0.2978	0.3048 0.2939	0.3249 0.2882	0.2991 0.2507	0.2648	Ave		0.2905			8.0		30.0				
1,2-Dichloropropane	0.2895 0.2766	0.2873 0.2702	0.2991 0.2519	0.2770 0.2368	0.2536	Ave		0.2713			7.5		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.



FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Trichloroethene	0.3934 0.4190	0.3866 0.4153	0.4304 0.4118	0.4016 0.3324	0.3450	Ave		0.3928			8.5		30.0				
Dibromomethane	++++ 0.3185	++++ 0.3164	0.3345 0.3123	0.3158 0.2790	0.2896	Ave		0.3094			6.1		30.0				
Bromodichloromethane	0.5167 0.5573	0.5247 0.5574	0.5617 0.5553	0.5441 0.4897	0.4985	Ave		0.5339			5.1		30.0				
1,4-Dioxane	++++ 0.1188	++++ 0.1148	0.1166 0.1049	0.1150 0.1015	0.1205	Ave		0.1132			6.3		30.0				
Methyl methacrylate	++++ 0.2868	++++ 0.2830	0.2405 0.2357	0.2497 0.2811	1.0481	Ave		0.3750			79.4	*	30.0				
Methylcyclohexane	++++ 0.6709	++++ 0.6386	0.7415 0.6182	0.6787 0.5177	0.6177	Ave		0.6456			10.2		30.0				
4-Methyl-2-pentanone (MIBK)	++++ 0.4678	++++ 0.4701	0.4220 0.4741	0.4474 0.4638	0.4938	Ave		0.4627			4.9		30.0				
cis-1,3-Dichloropropene	++++ 0.3671	++++ 0.3708 0.3808	0.3762 0.3815	0.3624 0.3627	0.3295	Ave		0.3664			4.5		30.0				
trans-1,3-Dichloropropene	0.3302 0.2940	0.3439 0.3250	0.3508 0.3323	0.3293 0.3140	0.3000	Ave		0.3244			5.8		30.0				
Toluene Range	++++ 1.9409	++++ 1.9672	++++ 1.8654	1.9223 1.8508	1.7675	Ave		1.8857			3.9		30.0				
Toluene	++++ 0.8418	0.9894 0.8760	0.9134 0.8150	0.8971 0.7582	0.8677	Ave		0.8698			7.9		30.0				
1,1,2-Trichloroethane	0.2536 0.2379	0.2722 0.2502	0.2682 0.2370	0.2610 0.2168	0.2410	Ave		0.2487			7.0		30.0				
2-Methylthiophene	++++ 0.6568	0.7423 0.6926	0.7236 0.6707	0.7176 0.6085	0.6647	Ave		0.6846			6.3		30.0				
3-Methylthiophene	0.6005 0.6234	0.6875 0.6641	0.6966 0.6513	0.6815 0.5878	0.6254	Ave		0.6465			6.1		30.0				
2-Hexanone	++++ 0.2161	0.2504 0.2466	0.2051 0.2587	0.2284 0.2207	0.2506	Ave		0.2346			8.3		30.0				
C8 Range	++++ 2.7430	++++ 2.6743	++++ 2.4714	2.5646 2.1802	2.8418	Ave		2.5792			9.1		30.0				
Octane	++++ 0.3426	0.3439 0.3522	0.3401 0.3295	0.3385 0.2798	0.3428	Ave		0.3337			6.8		30.0				
Dibromochloromethane	++++ 0.4998	0.5037 0.5493	0.5150 0.5634	0.5207 0.5059	0.5003	Ave		0.5198			4.6		30.0				
1,2-Dibromoethane (EDB)	0.3708 0.3641	0.4323 0.3956	0.4168 0.4051	0.4043 0.3656	0.3669	Ave		0.3913			6.5		30.0				
Tetrachloroethene	0.3407 0.3272	0.3768 0.3461	0.3765 0.3494	0.3694 0.3080	0.3274	Ave		0.3468			6.9		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Chlorobenzene	++++ 0.5893	0.6597 0.6400	0.6746 0.6357	0.6528 0.5889	0.5872	Ave		0.6285			5.6		30.0				
2,3-Dimethylheptane	++++ 0.8470	0.9036 0.8218	0.8115 0.7270	0.8596 0.5781	0.9200	Ave		0.8086			13.7		30.0				
Ethylbenzene	1.0770 1.0602	1.1630 1.1037	1.1043 0.9906	1.0948 0.9908	1.0784	Ave		1.0736			5.1		30.0				
2-Ethylthiophene	0.7034 0.7381	0.8001 0.7916	0.7779 0.7470	0.7858 0.7262	0.7420	Ave		0.7569			4.4		30.0				
m-Xylene & p-Xylene	0.7948 0.8167	0.8914 0.8384	0.8369 0.7342	0.8423 0.7263	0.8470	Ave		0.8142			6.6		30.0				
Nonane	0.4900 0.5100	0.5465 0.5137	0.5070 0.4625	0.4961 0.3672	0.5302	Ave		0.4915			10.7		30.0				
Bromoform	++++ 0.4613	0.4070 0.5481	0.4563 0.6482	0.4742 0.6868	0.4523	Ave		0.5168			19.6		30.0				
Styrene	++++ 0.5489	0.5655 0.5996	0.5396 0.5634	0.5779 0.5551	0.5683	Ave		0.5648			3.3		30.0				
o-Xylene	++++ 0.9201	1.0282 0.9241	0.9163 0.7926	0.9189 0.8056	0.9758	Ave		0.9102			8.6		30.0				
1,1,2,2-Tetrachloroethane	++++ 0.6093	0.6705 0.6246	0.6164 0.5934	0.6304 0.5892	0.6836	Ave		0.6272			5.4		30.0				
1,2,3-Trichloropropane	++++ 0.1863	++++ 0.1935	0.1870 0.1752	0.1909 0.1859	0.1990	Ave		0.1883			3.9		30.0				
Isopropylbenzene	++++ 1.3183	++++ 1.3235	1.2612 1.1374	1.2777 1.1732	1.4142	Ave		1.2722			7.4		30.0				
Propylbenzene	++++ 0.3376	0.3461 0.3510	0.3099 0.3173	0.3190 0.3542	0.3490	Ave		0.3355			5.2		30.0				
2-Chlorotoluene	++++ 0.3127	++++ 0.3290	0.3189 0.3058	0.3109 0.3077	0.3176	Ave		0.3147			2.5		30.0				
4-Ethyltoluene	++++ 1.1390	1.2509 1.1990	1.0080 1.0620	1.1153 1.1220	1.2040	Ave		1.1375			7.0		30.0				
1,3,5-Trimethylbenzene	++++ 0.6041	0.6423 0.6178	0.5379 0.5356	0.5680 0.5999	0.6468	Ave		0.5940			7.3		30.0				
Alpha Methyl Styrene	++++ 0.4518	0.4030 0.4980	0.3540 0.4616	0.3947 0.5097	0.4587	Ave		0.4414			12.1		30.0				
Decane	++++ 0.5487	++++ 0.5556	0.4760 0.4835	0.5219 0.4767	0.6006	Ave		0.5233			9.1		30.0				
tert-Butylbenzene	++++ 1.1568	++++ 1.1705	1.0470 1.0340	1.0968 1.1459	1.2565	Ave		1.1297			6.8		30.0				
1,2,4-Trimethylbenzene	++++ 0.9849	1.0495 1.0106	0.8638 0.9082	0.9403 0.9510	1.0611	Ave		0.9712			7.1		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097

SDG No.: \_\_\_\_\_

Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
sec-Butylbenzene	++++ 1.4269	1.5139 1.4634	1.2685 1.3222	1.3679 1.3828	1.5470	Ave		1.4116			6.7		30.0				
1,3-Dichlorobenzene	++++ 0.5462	0.5974 0.6119	0.5734 0.6346	0.5784 0.6800	0.5756	Ave		0.5997			7.0		30.0				
Benzyl chloride	++++ 0.6111	0.5108 0.7173	0.5405 0.7269	0.5850 0.7007	0.6503	Ave		0.6303			13.0		30.0				
1,4-Dichlorobenzene	++++ 0.4936	0.5542 0.5614	0.5599 0.5881	0.5406 0.5800	0.5253	Ave		0.5504			5.5		30.0				
4-Isopropyltoluene	0.8905 1.1633	1.2012 1.2024	0.9764 1.0974	1.0914 1.1929	1.2755	Ave		1.1212			10.9		30.0				
1,2,3-Trimethylbenzene	++++ 0.7554	0.8151 0.7781	0.6704 0.6925	0.7189 0.7147	0.8177	Ave		0.7453			7.4		30.0				
Butylcyclohexane	0.7391 0.7690	0.8605 0.7936	0.7467 0.7209	0.7611 0.6703	0.8195	Ave		0.7645			7.3		30.0				
1,2-Dichlorobenzene	++++ 0.5646	0.6038 0.6223	0.5681 0.6292	0.5740 0.7073	0.6054	Ave		0.6093			7.6		30.0				
Indane	++++ 0.8749	0.9387 0.9347	0.8326 0.8788	0.8559 0.9285	0.9249	Ave		0.8961			4.5		30.0				
Indene	++++ 0.5939	0.5146 0.6521	0.5146 0.6225	0.5656 0.6666	0.6236	LinF		0.6566						0.9990		0.9900	
Butylbenzene	++++ 0.9174	0.8337 0.9750	0.7628 0.9262	0.8383 0.8764	1.0158	Ave		0.8932			9.2		30.0				
Undecane	++++ 0.4686	0.4268 0.5095	0.4139 0.4990	0.4319 0.3754	0.5164	Ave		0.4552			11.2		30.0				
1,2-Dimethyl-4-Ethylbenzene	++++ 0.7450	0.6689 0.8066	0.5953 0.7939	0.6728 0.7063	0.8202	QuaF		0.8509	-0.008942					1.0000		0.9900	
1,2-Dibromo-3-Chloropropane	++++ 0.2166	0.1889 0.2531	0.1983 0.2914	0.2059 0.2320	0.2351	Ave		0.2277			14.6		30.0				
1,2,4,5-Tetramethylbenzene	++++ 0.8393	0.7255 0.9267	0.6888 0.9581	0.7541 0.6467	0.9336	Ave		0.8091			15.0		30.0				
1,2,3,5-Tetramethylbenzene	++++ 0.5072	0.4458 0.5703	0.4117 0.5818	0.4751 0.3587	0.5750	Ave		0.4907			16.9		30.0				
1,2,3,4-Tetramethylbenzene	++++ 0.6247	0.5634 0.7279	0.5473 0.7725	0.6057 0.3416	0.7163	Ave		0.6124			22.2		30.0				
Dodecane	++++ 0.3088	0.4030 0.4135	0.3638 0.4566	0.3967 ++++	0.3959	Ave		0.3912			11.7		30.0				
1,2,4-Trichlorobenzene	++++ 0.2890	0.3068 0.3809	0.2995 0.4888	0.3097 ++++	0.3320	Ave		0.3438			20.6		30.0				
Naphthalene	0.4884 0.5682	0.5814 0.7514	0.5871 0.9102	0.6241 ++++	0.6629	Ave		0.6467			20.3		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
 AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
 CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 4097

SDG No.: \_\_\_\_\_

Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/07/2016 19:02 Calibration End Date: 01/08/2016 00:44 Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Benzo(b)thiophene	++++ 0.2943	0.3477 0.4017	0.3575 0.5082	0.3742 ++++	0.3493	Ave		0.3761			17.7		30.0				
Hexachlorobutadiene	++++ 0.4396	0.4859 0.5251	0.3720 0.5830	0.3906 ++++	0.5102	Ave		0.4724			16.0		30.0				
1,2,3-Trichlorobenzene	++++ 0.2580	0.3027 0.3436	0.2875 0.4302	0.2803 ++++	0.3087	Ave		0.3159			18.0		30.0				
2-Methylnaphthalene	++++ 0.1262	0.1941 0.1822	0.1379 0.2085	0.1468 ++++	0.1700	Ave		0.1665			18.4		50.0				
1-Methylnaphthalene	++++ 0.1136	++++ 0.1612	0.1197 0.1800	0.1301 ++++	0.1553	Ave		0.1433			18.3		50.0				
4-Bromofluorobenzene (Surr)	0.6818 0.6730	0.6833 0.6687	0.6751 0.6613	0.6721 0.6527	0.6737	Ave		0.6713			1.4		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621

SDG No.: \_\_\_\_\_

Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-3621/2	RJ29IC01.D
Level 2	IC 140-3621/3	RJ29IC02.D
Level 3	IC 140-3621/4	RJ29IC03.D
Level 4	IC 140-3621/5	RJ29IC04.D
Level 5	IC 140-3621/6	RJ29IC05.D
Level 6	ICIS 140-3621/7	RJ29ICIS06.D
Level 7	IC 140-3621/8	RJ29IC07.D
Level 8	IC 140-3621/9	RJ29IC08.D
Level 9	IC 140-3621/10	RJ29IC09.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Propene	++++ 1.1943	++++ 1.0932	2.1003 0.9972	1.5543 ++++	1.3495	Ave	1.3815				29.2		30.0				
Chlorodifluoromethane	0.4031 0.3381	0.4052 0.3175	0.3723 0.2996	0.3571 0.2647	0.3637	Ave	0.3468				13.5		30.0				
Dichlorodifluoromethane	++++ 2.8321	3.3201 2.7901	3.7462 2.6298	3.1733 2.4628	3.5041	Ave	3.0573				14.7		30.0				
Chloromethane	++++ 0.4515	++++ 0.4186	0.5504 0.3905	0.4948 0.3403	0.4858	Ave	0.4474				15.8		30.0				
1,2-Dichloro-1,1,2,2-tetrafluoroethane	2.9120 2.8287	2.9379 2.6523	2.8208 2.5560	2.7396 2.3179	2.9344	Ave	2.7444				7.5		30.0				
Acetaldehyde	++++ 0.7362	++++ 0.5717	++++ ++++	1.1675 ++++	0.8522	Ave	0.8319				30.2	*	30.0				
Vinyl chloride	1.6810 1.4558	1.6687 1.3449	1.5943 1.2563	1.5350 1.1136	1.6456	Ave	1.4772				13.6		30.0				
1,3-Butadiene	++++ 1.1740	1.3144 1.0722	1.3072 1.0196	1.2173 0.9152	1.3087	Ave	1.1661				12.9		30.0				
Butane	++++ 1.9986	++++ 1.8195	2.3128 1.6842	2.2153 1.4724	2.3130	Ave	1.9737				16.7		30.0				
Bromomethane	++++ 1.3914	1.7367 1.2804	1.5171 1.2490	1.4727 1.1460	1.5307	Ave	1.4155				13.3		30.0				
Chloroethane	++++ 0.7194	0.8921 0.6685	0.8013 0.6488	0.7674 0.6015	0.8188	Ave	0.7397				13.2		30.0				
Ethanol	++++ 0.3851	++++ 0.3363	0.5233 0.3041	0.4839 0.2590	0.4546	Ave	0.3923				25.1		30.0				
Vinyl bromide	1.4813 1.3753	1.4858 1.2910	1.4030 1.2735	1.3838 1.2166	1.4813	Ave	1.3768				7.2		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
2-Methylbutane	++++ 1.5804	++++ 1.4725	1.7301 1.4604	1.6326 1.3280	1.6797	Ave		1.5548			9.1		30.0				
Acrolein	++++ 0.5517	++++ 0.5297	0.4552 0.5130	0.4235 0.4730	0.5813	Ave		0.5039			11.1		30.0				
Trichlorofluoromethane	3.8568 3.4728	3.7263 3.3742	3.6422 3.3439	3.5126 3.1098	3.7264	Ave		3.5294			6.6		30.0				
Acetonitrile	++++ 0.6013	++++ 0.5648	++++ 0.5413	0.6859 0.4966	0.6531	Ave		0.5905			12.0		30.0				
Acetone	++++ 0.9653	++++ 0.7936	++++ 0.6814	1.5069 0.6218	1.0294	Ave		0.9331			34.5	*	30.0				
Pentane	++++ 0.2694	++++ 0.2618	0.2753 0.2603	0.2737 0.2438	0.2885	Ave		0.2686			5.0		30.0				
Isopropyl alcohol	++++ 1.9805	2.1183 1.8753	2.0751 1.7948	2.0391 1.5630	2.0918	Ave		1.9422			9.8		30.0				
Ethyl ether	++++ 1.3598	++++ 1.2853	1.4470 1.2371	1.4329 1.1011	1.4804	Ave		1.3348			10.2		30.0				
1,1-Dichloroethene	1.5222 1.3640	1.4729 1.3353	1.3978 1.3420	1.3641 1.2885	1.4410	Ave		1.3920			5.3		30.0				
Acrylonitrile	1.1062 1.0584	1.1288 1.0291	1.0867 1.0385	1.0417 0.9873	1.1046	Ave		1.0646			4.3		30.0				
tert-Butyl alcohol	2.7378 2.5788	2.7440 2.5194	2.6057 2.4858	2.5536 2.3195	2.6999	Ave		2.5827			5.3		30.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1516 2.9590	3.1042 2.9023	3.0721 2.9045	2.9660 2.7288	3.1030	Ave		2.9879			4.5		30.0				
Methylene Chloride	++++ 1.2754	++++ 1.2272	1.7623 1.1961	1.4553 1.1290	1.3878	Ave		1.3476			15.9		30.0				
3-Chloropropene	++++ 1.1393	1.6869 1.0789	1.3121 1.0344	1.2119 0.9046	1.2149	Ave		1.1979			19.5		30.0				
Carbon disulfide	4.2867 3.9057	4.2861 3.8195	4.0695 3.8044	3.9875 3.5966	4.1714	Ave		3.9919			5.9		30.0				
trans-1,2-Dichloroethene	1.5832 1.4297	1.5104 1.3896	1.4643 1.4012	1.4167 1.3399	1.5075	Ave		1.4492			5.2		30.0				
2-Methylpentane	++++ 2.8429	3.0961 2.7352	3.0068 2.6326	2.9012 2.3970	3.0124	Ave		2.8280			8.2		30.0				
Methyl tert-butyl ether	3.9015 3.6537	3.7790 3.5833	3.6513 3.5632	3.5940 3.3577	3.8420	Ave		3.6584			4.5		30.0				
1,1-Dichloroethane	2.7755 2.5564	2.7282 2.4845	2.6794 2.4620	2.5959 2.3104	2.7366	Ave		2.5921			5.9		30.0				
Vinyl acetate	3.7056 3.7777	3.6479 3.7019	3.5205 3.6757	3.4969 3.4008	3.8463	Ave		3.6415			3.9		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville

Job No.: 140-4707-1

Analy Batch No.: 3621

SDG No.: \_\_\_\_\_

Instrument ID: MR

GC Column: RTX-5

ID: 0.32 (mm)

Heated Purge: (Y/N) N

Calibration Start Date: 10/29/2015 14:14

Calibration End Date: 10/29/2015 21:11

Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
2-Butanone (MEK)	0.8084 0.7840	0.8596 0.7212	1.0144 0.6770	1.0123 0.6426	0.8106	Ave	0.8144				16.2		30.0				
Hexane	++++ 1.1487	1.2590 1.1299	1.1904 1.1238	1.1536 1.0504	1.2014	Ave	1.1572				5.3		30.0				
C6 Range	++++ 1.8390	++++ 1.7975	++++ 1.7835	1.9377 1.6454	1.9967	Ave	1.8333				6.8		30.0				
Isopropyl ether	5.3180 4.9070	5.1843 4.7640	5.0675 4.6421	4.9881 4.1667	5.1783	Ave	4.9129				7.2		30.0				
cis-1,2-Dichloroethene	1.5671 1.4703	1.5680 1.4488	1.5139 1.4569	1.4801 1.3905	1.5569	Ave	1.4947				4.1		30.0				
Ethyl acetate	++++ 3.1406	3.2296 3.0553	3.2587 3.0012	3.0939 2.7514	3.2866	Ave	3.1022				5.6		30.0				
Chloroform	3.1827 2.9083	3.1492 2.8184	2.9994 2.7531	2.9471 2.5704	3.0641	Ave	2.9325				6.7		30.0				
Tert-butyl ethyl ether	4.2930 4.2782	4.3134 4.2198	4.2038 4.1452	4.1511 3.8468	4.4336	Ave	4.2094				3.9		30.0				
Tetrahydrofuran	++++ 1.5513	++++ 1.5015	1.6182 1.4780	1.5622 1.3764	1.6457	Ave	1.5333				5.9		30.0				
1,1,1-Trichloroethane	++++ 2.8838	2.8868 2.8063	2.8235 2.7974	2.8024 2.6272	2.9563	Ave	2.8230				3.4		30.0				
1,2-Dichloroethane	0.3828 0.3735	0.3891 0.3635	0.3820 0.3581	0.3769 0.3379	0.3987	Ave	0.3736				4.9		30.0				
1-Butanol	++++ 0.0951	++++ 0.0948	++++ 0.0921	0.1030 0.0831	0.0958	Ave	0.0940				6.9		30.0				
Benzene	++++ 0.8271	0.9614 0.8238	0.8642 0.8185	0.8518 0.7643	0.8795	Ave	0.8488				6.8		30.0				
Cyclohexane	0.1322 0.1284	0.1307 0.1292	0.1247 0.1263	0.1291 0.1176	0.1351	Ave	0.1281				3.9		30.0				
Carbon tetrachloride	0.5759 0.5120	0.5620 0.6130	0.4691 0.5841	0.4790 0.5998	0.5275	Ave	0.5469				9.6		30.0				
2,3-Dimethylpentane	0.1920 0.1892	0.1954 0.1872	0.1854 0.1869	0.1843 0.1802	0.2002	Ave	0.1890				3.2		30.0				
Thiophene	0.4668 0.4678	0.4815 0.4636	0.4629 0.4678	0.4639 0.4516	0.4954	Ave	0.4690				2.7		30.0				
Tert-amyl methyl ether	++++ 0.7842	0.7372 0.7698	0.7974 0.7695	0.8389 0.7363	0.8304	Ave	0.7829				4.9		30.0				
2,2,4-Trimethylpentane	1.4927 1.4165	1.4490 1.4024	1.4025 1.3971	1.3962 1.2994	1.4856	Ave	1.4157				4.1		30.0				
Heptane	0.3008 0.3010	0.2923 0.3007	0.2843 0.2991	0.2929 0.2825	0.3140	Ave	0.2964				3.3		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
1,2-Dichloropropane	0.3498 0.3319	0.3348 0.3297	0.3301 0.3260	0.3302 0.3040	0.3480	Ave	0.3316				4.0	30.0					
Trichloroethene	0.4004 0.3972	0.3966 0.4006	0.3869 0.4085	0.3958 0.4051	0.4101	Ave	0.4001				1.8	30.0					
Dibromomethane	++++ 0.3394	0.3782 0.3353	0.3388 0.3351	0.3316 0.3207	0.3509	Ave	0.3413				5.0	30.0					
Bromodichloromethane	0.5615 0.5910	0.5566 0.5929	0.5458 0.5900	0.5529 0.5622	0.6074	Ave	0.5734				3.8	30.0					
1,4-Dioxane	0.1414 0.1314	0.1311 0.1310	0.1220 0.1297	0.1239 0.1236	0.1347	Ave	0.1299				4.7	30.0					
Methyl methacrylate	++++ 0.3658	0.3574 0.3653	0.3366 0.3583	0.3474 0.3315	0.3728	Ave	0.3544				4.1	30.0					
Methylcyclohexane	0.6225 0.6136	0.6064 0.6143	0.5987 0.6153	0.6019 0.5921	0.6390	Ave	0.6115				2.3	30.0					
4-Methyl-2-pentanone (MIBK)	++++ 0.7326	++++ 0.6922	1.2268 0.6622	0.9195 0.6091	0.8130	Ave	0.8079				26.1	30.0					
cis-1,3-Dichloropropene	0.4624 0.4902	0.4548 0.4907	0.4447 0.4978	0.4612 0.4750	0.5058	Ave	0.4758				4.5	30.0					
trans-1,3-Dichloropropene	0.4492 0.4808	0.4424 0.4805	0.4242 0.4829	0.4435 0.4659	0.4858	Ave	0.4617				4.9	30.0					
Toluene Range	++++ 2.4309	++++ 2.4075	++++ ++++	++++ ++++	2.5663	Ave	2.4682				3.5	30.0					
Toluene	++++ 1.0900	1.1498 1.0851	1.0755 1.0686	1.0620 1.0261	1.1274	Ave	1.0856				3.5	30.0					
1,1,2-Trichloroethane	0.3348 0.3200	0.3334 0.3154	0.3168 0.3108	0.3205 0.2984	0.3293	Ave	0.3200				3.6	30.0					
2-Methylthiophene	0.8829 0.8994	0.8741 0.8944	0.8582 0.8931	0.8599 0.8603	0.9243	Ave	0.8830				2.5	30.0					
3-Methylthiophene	0.8699 0.8867	0.8726 0.8871	0.8331 0.8850	0.8488 0.8528	0.9135	Ave	0.8722				2.8	30.0					
2-Hexanone	++++ 0.3894	++++ 0.3953	0.3569 0.3932	0.3792 0.3745	0.3885	Ave	0.3824				3.5	30.0					
Dibromochloromethane	++++ 0.6753	0.5114 0.7089	0.5261 0.7183	0.5694 0.7037	0.6590	Ave	0.6340				13.4	30.0					
Octane	++++ 0.3749	0.3601 0.3704	0.3360 0.3658	0.3541 0.3453	0.3763	Ave	0.3604				4.0	30.0					
C8 Range	++++ 5.0502	++++ 5.0470	++++ ++++	++++ ++++	5.2063	Ave	5.1012				1.8	30.0					
1,2-Dibromoethane (EDB)	++++ 0.6124	0.5766 0.6156	0.5549 0.6159	0.5714 0.5968	0.6167	Ave	0.5950				4.1	30.0					

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.



FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Tetrachloroethene	0.3971 0.3995	0.3928 0.4002	0.3851 0.4033	0.3843 0.3920	0.4088	Ave		0.3959			2.1		30.0				
Chlorobenzene	0.9393 0.8677	0.9128 0.8698	0.8677 0.8865	0.8606 0.8618	0.9084	Ave		0.8860			3.1		30.0				
2,3-Dimethylheptane	++++ 0.9253	0.9785 0.9113	0.9431 0.8829	0.9331 0.7873	0.9644	Ave		0.9157			6.5		30.0				
Ethylbenzene	1.5124 1.4048	1.4482 1.4107	1.3721 1.4202	1.3726 1.3474	1.4661	Ave		1.4172			3.7		30.0				
2-Ethylthiophene	++++ 1.0542	1.0224 1.0612	0.9779 1.0778	1.0058 1.0424	1.0868	Ave		1.0411			3.6		30.0				
m-Xylene & p-Xylene	1.1245 1.0955	1.1094 1.1095	1.0386 1.1046	1.0655 1.0209	1.1403	Ave		1.0899			3.7		30.0				
Bromoform	++++ 0.6400	0.3628 0.7240	0.4080 0.7656	0.4505 0.7824	0.6029	Ave		0.5920			28.0		30.0				
Styrene	++++ 0.8391	0.6948 0.8637	0.6625 0.8905	0.7392 0.8772	0.8414	Ave		0.8010			11.1		30.0				
Nonane	0.7208 0.7483	0.7068 0.7515	0.7075 0.7219	0.7361 0.6316	0.7707	Ave		0.7217			5.5		30.0				
o-Xylene	1.1532 1.1450	1.1382 1.1514	1.0821 1.1365	1.1188 1.0525	1.1900	Ave		1.1297			3.6		30.0				
1,1,2,2-Tetrachloroethane	0.8259 0.8267	0.8297 0.8241	0.7562 0.8296	0.7761 0.7913	0.8492	Ave		0.8121			3.7		30.0				
1,2,3-Trichloropropane	++++ 0.2474	++++ 0.2484	0.2362 0.2521	0.2385 0.2456	0.2585	Ave		0.2467			3.1		30.0				
Isopropylbenzene	++++ 1.6328	++++ 1.6324	1.5839 1.6190	1.5672 1.5234	1.6766	Ave		1.6050			3.2		30.0				
Propylbenzene	++++ 0.4672	0.4292 0.4827	0.4170 0.4952	0.4375 0.4783	0.4736	Ave		0.4601			6.2		30.0				
2-Chlorotoluene	0.4100 0.4185	0.4087 0.4296	0.3903 0.4380	0.4018 0.4207	0.4312	Ave		0.4165			3.7		30.0				
4-Ethyltoluene	++++ 1.6101	1.5474 1.6429	1.4566 1.6620	1.5315 1.5921	1.6526	Ave		1.5869			4.5		30.0				
1,3,5-Trimethylbenzene	0.7187 0.7777	0.7113 0.7970	0.6955 0.8244	0.7275 0.8058	0.7906	Ave		0.7610			6.3		30.0				
Alpha Methyl Styrene	++++ 0.6579	++++ 0.7024	0.4692 0.7580	0.5596 0.7584	0.6326	Ave		0.6483			16.3		30.0				
Decane	++++ 0.9516	++++ 0.9628	++++ 0.9433	0.9086 0.8616	0.9639	Ave		0.9320			4.3		30.0				
tert-Butylbenzene	1.4055 1.4834	1.3862 1.5168	1.3321 1.5455	1.3958 1.4825	1.5085	Ave		1.4507			5.0		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621  
 SDG No.: \_\_\_\_\_  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N  
 Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
1,2,4-Trimethylbenzene	1.2839 1.3828	1.3201 1.4095	1.2415 1.4188	1.3158 1.3450	1.4011	Ave		1.3465			4.6		30.0				
1,3-Dichlorobenzene	0.9595 0.9791	0.9581 0.9978	0.8819 1.0255	0.9184 1.0237	0.9763	Ave		0.9689			4.8		30.0				
sec-Butylbenzene	1.8610 2.0133	1.9102 2.0376	1.8456 2.0400	1.9205 1.9259	2.0431	Ave		1.9552			4.0		30.0				
Benzyl chloride	++++ 1.2770	++++ 1.3199	1.0354 1.3225	1.1309 1.2254	1.2503	Ave		1.2231			8.6		30.0				
1,4-Dichlorobenzene	1.0034 1.0108	0.9995 1.0377	0.9021 1.0595	0.9396 1.0367	1.0092	Ave		0.9998			5.0		30.0				
4-Isopropyltoluene	++++ 1.8150	1.6520 1.8610	1.5813 1.8766	1.6914 1.8013	1.8050	Ave		1.7605			6.0		30.0				
1,2,3-Trimethylbenzene	1.0626 1.1049	1.0737 1.1152	1.0216 1.1178	1.0629 1.0924	1.1205	Ave		1.0857			3.1		30.0				
Butylcyclohexane	++++ 1.0670	1.0218 1.0697	0.9793 1.0536	1.0397 0.9991	1.0732	Ave		1.0379			3.4		30.0				
1,2-Dichlorobenzene	0.9738 0.9580	0.9459 0.9816	0.8646 0.9993	0.9117 0.9851	0.9554	Ave		0.9528			4.4		30.0				
Indane	1.2739 1.3483	1.2717 1.3850	1.2079 1.4008	1.2806 1.3384	1.3482	Ave		1.3172			4.7		30.0				
Indene	0.8884 0.9624	0.9075 1.0226	0.8242 1.0669	0.9346 1.0700	0.9299	Ave		0.9563			8.7		30.0				
Butylbenzene	1.5687 1.7017	1.6043 1.6927	1.5380 1.6389	1.6477 1.5387	1.7078	Ave		1.6265			4.2		30.0				
1,2-Dimethyl-4-Ethylbenzene	++++ 1.3413	1.2020 1.3742	1.1415 1.3660	1.2786 1.3600	1.2858	Ave		1.2937			6.5		30.0				
1,2-Dibromo-3-Chloropropane	++++ 0.4642	0.2975 0.5025	0.2979 0.5032	0.3571 0.5178	0.4232	Ave		0.4204			21.9		30.0				
Undecane	++++ 1.1449	++++ 1.1531	++++ 1.0437	1.0819 0.9185	1.0961	Ave		1.0730			8.0		30.0				
1,2,4,5-Tetramethylbenzene	++++ 1.5415	1.4441 1.5827	1.3383 1.5453	1.4793 1.5214	1.4444	Ave		1.4871			5.2		30.0				
1,2,3,5-Tetramethylbenzene	++++ 0.9309	0.9025 0.9465	0.8151 0.9215	0.9066 0.9347	0.8658	Ave		0.9029			4.8		30.0				
1,2,3,4-Tetramethylbenzene	++++ 1.2721	1.2768 1.3119	1.1198 1.2621	1.2503 1.2700	1.1457	Ave		1.2386			5.5		30.0				
Dodecane	++++ 1.0804	++++ 1.1477	++++ 0.9888	1.0511 0.9094	0.8525	Ave		1.0050			11.0		30.0				
1,2,4-Trichlorobenzene	0.8403 0.9230	0.9017 0.9750	0.7190 0.9388	0.8283 0.9457	0.7593	Ave		0.8701			10.2		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
 AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
 CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1 Analy Batch No.: 3621

SDG No.: \_\_\_\_\_

Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/29/2015 14:14 Calibration End Date: 10/29/2015 21:11 Calibration ID: 393

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Naphthalene	2.3324 2.0463	2.5317 2.1120	1.7261 1.9763	1.9936 1.9355	1.6842	Ave		2.0375			13.2		30.0				
Benzo(b)thiophene	++++ 1.2397	++++ 1.2840	1.1013 1.2172	1.3036 1.2405	0.9576	Ave		1.1920			10.2		30.0				
Hexachlorobutadiene	0.5517 0.7334	0.5845 0.7978	0.5529 0.7579	0.6243 0.7629	0.5970	Ave		0.6625			15.0		30.0				
1,2,3-Trichlorobenzene	0.8737 0.8823	0.9509 0.9564	0.6710 0.8969	0.7762 0.8456	0.6454	Ave		0.8332			13.6		30.0				
2-Methylnaphthalene	++++ 0.3082	++++ 0.3771	0.2184 0.3543	0.2862 0.2213	0.1492	Ave		0.2735			29.8		50.0				
1-Methylnaphthalene	++++ 0.2480	++++ 0.2970	0.1846 0.2786	0.2352 0.1527	0.1149	Ave		0.2158			31.1		50.0				
4-Bromofluorobenzene (Surr)	0.7286 0.7553	0.7264 0.7584	0.7267 0.7475	0.7348 0.7281	0.7429	Ave		0.7387			1.7		30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-4097/12 Calibration Date: 01/08/2016 02:07  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GA07ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorodifluoromethane	Ave	0.3422	0.3409		1.99	2.00	-0.4	35.0
Propene	Ave	1.315	1.083		1.65	2.00	-17.7	35.0
Dichlorodifluoromethane	Ave	3.467	3.551		2.05	2.00	2.4	35.0
Chloromethane	Ave	0.3442	0.3400		1.98	2.00	-1.2	35.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	2.384	2.483		2.08	2.00	4.2	35.0
Acetaldehyde	Ave	0.4717	0.3930		8.33	10.0	-16.7	35.0
Vinyl chloride	Ave	1.239	1.274		2.06	2.00	2.8	35.0
1,3-Butadiene	Ave	0.9190	0.9258		2.01	2.00	0.7	35.0
Butane	Ave	1.788	1.842		2.06	2.00	3.0	35.0
Bromomethane	Ave	1.220	1.229		2.01	2.00	0.7	35.0
Chloroethane	Ave	0.6197	0.6401		2.07	2.00	3.3	35.0
Ethanol	Ave	0.4269	0.4253		9.96	10.0	-0.4	35.0
Vinyl bromide	Ave	1.139	1.272		2.23	2.00	11.6	35.0
2-Methylbutane	Ave	1.254	1.339		2.13	2.00	6.7	35.0
Trichlorofluoromethane	Ave	3.231	3.432		2.12	2.00	6.2	35.0
Acrolein	Ave	0.2525	0.2914		2.31	2.00	15.4	35.0
Acetonitrile	Ave	0.3857	0.4468		2.32	2.00	15.8	35.0
Acetone	Ave	0.4899	0.5021		6.15	6.00	2.5	35.0
Isopropyl alcohol	Ave	1.315	1.383		6.31	6.00	5.2	35.0
Pentane	Ave	0.2110	0.2425		2.30	2.00	14.9	35.0
Ethyl ether	Ave	1.171	1.409		2.41	2.00	20.3	35.0
1,1-Dichloroethene	Ave	1.245	1.335		2.15	2.00	7.3	35.0
Acrylonitrile	Ave	0.6716	0.8057		2.40	2.00	20.0	35.0
tert-Butyl alcohol	Ave	1.966	2.050		2.09	2.00	4.3	35.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	2.554	2.784		2.18	2.00	9.0	35.0
Methylene Chloride	Ave	1.190	1.195		2.01	2.00	0.4	35.0
3-Chloropropene	Ave	1.082	1.101		2.04	2.00	1.8	35.0
Carbon disulfide	Ave	3.581	3.710		2.07	2.00	3.6	35.0
trans-1,2-Dichloroethene	Ave	1.306	1.381		2.12	2.00	5.8	35.0
2-Methylpentane	Ave	2.377	2.805		2.36	2.00	18.0	35.0
Methyl tert-butyl ether	Ave	3.117	3.547		2.28	2.00	13.8	35.0
1,1-Dichloroethane	Ave	2.136	2.370		2.22	2.00	11.0	35.0
Vinyl acetate	Ave	2.411	2.893		2.40	2.00	20.0	35.0
2-Butanone (MEK)	Ave	0.5217	0.5710		2.19	2.00	9.4	35.0
Hexane	Ave	0.8912	0.9793		2.20	2.00	9.9	35.0
Isopropyl ether	Ave	3.601	4.032		2.24	2.00	12.0	35.0
cis-1,2-Dichloroethene	Ave	1.323	1.470		2.22	2.00	11.2	35.0
Ethyl acetate	Ave	1.982	2.229		2.25	2.00	12.5	35.0
Chloroform	Ave	2.603	2.834		2.18	2.00	8.9	35.0
Tert-butyl ethyl ether	Ave	3.235	3.665		2.27	2.00	13.3	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-4097/12 Calibration Date: 01/08/2016 02:07  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GA07ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Tetrahydrofuran	Ave	1.129	1.291		2.29	2.00	14.4	35.0
1,1,1-Trichloroethane	Ave	2.855	3.085		2.16	2.00	8.1	35.0
1,2-Dichloroethane	Ave	0.3437	0.3704		2.16	2.00	7.8	35.0
1-Butanol	Ave	0.0917	0.0875		1.91	2.00	-4.6	35.0
Benzene	Ave	0.7697	0.8600		2.23	2.00	11.7	35.0
Cyclohexane	Ave	0.1388	0.1429		2.06	2.00	2.9	35.0
Carbon tetrachloride	Ave	0.6398	0.5845		1.83	2.00	-8.6	35.0
2,3-Dimethylpentane	Ave	0.1977	0.1862		1.88	2.00	-5.8	35.0
Thiophene	Ave	0.4367	0.4902		2.25	2.00	12.3	35.0
Tert-amyl methyl ether	Ave	0.7265	0.7800		2.15	2.00	7.4	35.0
2,2,4-Trimethylpentane	Ave	1.252	1.274		2.03	2.00	1.7	35.0
Heptane	Ave	0.2905	0.3097		2.13	2.00	6.6	35.0
1,2-Dichloropropane	Ave	0.2713	0.2989		2.20	2.00	10.2	35.0
Trichloroethene	Ave	0.3928	0.4417		2.25	2.00	12.4	35.0
Dibromomethane	Ave	0.3094	0.3355		2.17	2.00	8.4	35.0
Bromodichloromethane	Ave	0.5339	0.5950		2.23	2.00	11.4	35.0
1,4-Dioxane	Ave	0.1132	0.1100		1.94	2.00	-2.8	35.0
Methyl methacrylate	Ave	0.3750	0.2989		1.59	2.00	-20.3	35.0
Methylcyclohexane	Ave	0.6456	0.5360		1.66	2.00	-17.0	35.0
4-Methyl-2-pentanone (MIBK)	Ave	0.4627	0.4735		2.05	2.00	2.3	35.0
cis-1,3-Dichloropropene	Ave	0.3664	0.4457		2.43	2.00	21.7	35.0
trans-1,3-Dichloropropene	Ave	0.3244	0.3910		2.41	2.00	20.5	35.0
Toluene	Ave	0.8698	1.035		2.38	2.00	18.9	35.0
1,1,2-Trichloroethane	Ave	0.2487	0.2802		2.25	2.00	12.7	35.0
2-Methylthiophene	Ave	0.6846	0.8430		2.46	2.00	23.1	35.0
3-Methylthiophene	Ave	0.6465	0.8505		2.63	2.00	31.6	35.0
2-Hexanone	Ave	0.2346	0.2266		1.93	2.00	-3.4	35.0
Octane	Ave	0.3337	0.3629		2.18	2.00	8.8	35.0
Dibromochloromethane	Ave	0.5198	0.6067		2.33	2.00	16.7	35.0
1,2-Dibromoethane (EDB)	Ave	0.3913	0.4809		2.46	2.00	22.9	35.0
Tetrachloroethene	Ave	0.3468	0.3900		2.25	2.00	12.4	35.0
Chlorobenzene	Ave	0.6285	0.7691		2.45	2.00	22.4	35.0
2,3-Dimethylheptane	Ave	0.8086	0.8666		2.14	2.00	7.2	35.0
Ethylbenzene	Ave	1.074	1.269		2.36	2.00	18.2	35.0
2-Ethylthiophene	Ave	0.7569	0.9159		2.42	2.00	21.0	35.0
m-Xylene & p-Xylene	Ave	0.8142	0.9633		4.73	4.00	18.3	35.0
Bromoform	Ave	0.5168	0.5892		2.28	2.00	14.0	35.0
Nonane	Ave	0.4915	0.5452		2.22	2.00	10.9	35.0
Styrene	Ave	0.5648	0.7012		2.48	2.00	24.2	35.0
o-Xylene	Ave	0.9102	1.021		2.24	2.00	12.2	35.0
1,1,2,2-Tetrachloroethane	Ave	0.6272	0.6400		2.04	2.00	2.0	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-4097/12 Calibration Date: 01/08/2016 02:07  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GA07ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2,3-Trichloropropane	Ave	0.1883	0.2115		2.25	2.00	12.3	35.0
Isopropylbenzene	Ave	1.272	1.488		2.34	2.00	17.0	35.0
Propylbenzene	Ave	0.3355	0.3957		2.36	2.00	17.9	35.0
2-Chlorotoluene	Ave	0.3147	0.3785		2.41	2.00	20.3	35.0
4-Ethyltoluene	Ave	1.138	1.241		2.18	2.00	9.1	35.0
1,3,5-Trimethylbenzene	Ave	0.5940	0.6705		2.26	2.00	12.9	35.0
Alpha Methyl Styrene	Ave	0.4414	0.5363		2.43	2.00	21.5	35.0
Decane	Ave	0.5233	0.6005		2.30	2.00	14.8	35.0
tert-Butylbenzene	Ave	1.130	1.260		2.23	2.00	11.5	35.0
1,2,4-Trimethylbenzene	Ave	0.9712	1.085		2.23	2.00	11.7	35.0
sec-Butylbenzene	Ave	1.412	1.578		2.24	2.00	11.8	35.0
1,3-Dichlorobenzene	Ave	0.5997	0.6675		2.23	2.00	11.3	35.0
Benzyl chloride	Ave	0.6303	0.7359		2.34	2.00	16.8	35.0
1,4-Dichlorobenzene	Ave	0.5504	0.6207		2.26	2.00	12.8	35.0
4-Isopropyltoluene	Ave	1.121	1.278		2.28	2.00	14.0	35.0
1,2,3-Trimethylbenzene	Ave	0.7453	0.8894		2.39	2.00	19.3	35.0
Butylcyclohexane	Ave	0.7645	0.8054		2.11	2.00	5.3	35.0
1,2-Dichlorobenzene	Ave	0.6093	0.6681		2.19	2.00	9.6	35.0
Indane	Ave	0.8961	0.9469		2.11	2.00	5.7	35.0
Indene	LinF		0.8733		2.66	2.00	33.0	35.0
Butylbenzene	Ave	0.8932	1.023		2.29	2.00	14.5	35.0
Undecane	Ave	0.4552	0.5091		2.24	2.00	11.9	35.0
1,2-Dimethyl-4-Ethylbenzene	QuaF		1.046		2.53	2.00	26.3	35.0
1,2-Dibromo-3-Chloropropane	Ave	0.2277	0.1673		1.47	2.00	-26.5	35.0
1,2,4,5-Tetramethylbenzene	Ave	0.8091	1.026		2.54	2.00	26.8	35.0
1,2,3,5-Tetramethylbenzene	Ave	0.4907	0.6439		2.62	2.00	31.2	35.0
1,2,3,4-Tetramethylbenzene	Ave	0.6124	0.7682		2.51	2.00	25.4	35.0
Dodecane	Ave	0.3912	0.3293		1.68	2.00	-15.8	35.0
1,2,4-Trichlorobenzene	Ave	0.3438	0.3351		1.95	2.00	-2.5	35.0
Naphthalene	Ave	0.6467	0.6508		2.01	2.00	0.6	35.0
Benzo (b) thiophene	Ave	0.3761	0.3907		2.08	2.00	3.9	35.0
Hexachlorobutadiene	Ave	0.4724	0.5133		2.17	2.00	8.7	35.0
1,2,3-Trichlorobenzene	Ave	0.3159	0.2975		1.88	2.00	-5.8	35.0
2-Methylnaphthalene	Ave	0.1665	0.0994		3.73	6.25	-40.3	50.0
1-Methylnaphthalene	Ave	0.1433	0.0891		3.89	6.25	-37.8	50.0
4-Bromofluorobenzene (Surr)	Ave	0.6713	0.6606		3.94	4.00	-1.6	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4620/2 Calibration Date: 04/06/2016 12:02  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GCCVD05C.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorodifluoromethane	Ave	0.3422	0.4072		2.37	1.99	19.0	30.0
Propene	Ave	1.315	1.215		1.84	1.99	-7.6	30.0
Dichlorodifluoromethane	Ave	3.467	3.818		2.19	1.99	10.1	30.0
Chloromethane	Ave	0.3442	0.3509		2.03	1.99	2.0	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	2.384	2.360		1.97	1.99	-1.0	30.0
Acetaldehyde	Ave	0.4717	0.3605		7.61	9.96	-23.6	30.0
Vinyl chloride	Ave	1.239	1.328		2.13	1.99	7.2	30.0
1,3-Butadiene	Ave	0.9190	0.9157		1.98	1.99	-0.4	30.0
Butane	Ave	1.788	1.956		2.18	1.99	9.4	30.0
Bromomethane	Ave	1.220	1.176		1.92	1.99	-3.7	30.0
Chloroethane	Ave	0.6197	0.6405		2.06	1.99	3.4	30.0
Ethanol	Ave	0.4269	0.3928		9.16	9.96	-8.0	30.0
Vinyl bromide	Ave	1.139	1.177		2.06	1.99	3.3	30.0
2-Methylbutane	Ave	1.254	1.337		2.12	1.99	6.6	30.0
Acrolein	Ave	0.2525	0.3121		2.46	1.99	23.6	30.0
Trichlorofluoromethane	Ave	3.231	3.745		2.31	1.99	15.9	30.0
Acetonitrile	Ave	0.3857	0.3846		1.99	1.99	-0.3	30.0
Acetone	Ave	0.4899	0.4019		4.90	5.97	-18.0	30.0
Isopropyl alcohol	Ave	1.315	1.237		5.62	5.97	-5.9	30.0
Pentane	Ave	0.2110	0.2424		2.29	1.99	14.9	30.0
Ethyl ether	Ave	1.171	1.278		2.17	1.99	9.1	30.0
1,1-Dichloroethene	Ave	1.245	1.094		1.75	1.99	-12.1	30.0
Acrylonitrile	Ave	0.6716	0.6653		1.97	1.99	-0.9	30.0
tert-Butyl alcohol	Ave	1.966	1.664		1.69	1.99	-15.4	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	2.554	2.369		1.85	1.99	-7.2	30.0
Methylene Chloride	Ave	1.190	1.030		1.72	1.99	-13.5	30.0
3-Chloropropene	Ave	1.082	1.170		2.15	1.99	8.1	30.0
Carbon disulfide	Ave	3.581	3.358		1.87	1.99	-6.2	30.0
trans-1,2-Dichloroethene	Ave	1.306	1.171		1.78	1.99	-10.4	30.0
2-Methylpentane	Ave	2.377	2.827		2.37	1.99	18.9	30.0
Methyl tert-butyl ether	Ave	3.117	3.221		2.06	1.99	3.3	30.0
1,1-Dichloroethane	Ave	2.136	2.366		2.21	1.99	10.8	30.0
Vinyl acetate	Ave	2.411	2.654		2.19	1.99	10.1	30.0
2-Butanone (MEK)	Ave	0.5217	0.4639		1.77	1.99	-11.1	30.0
Hexane	Ave	0.8912	0.9480		2.12	1.99	6.4	30.0
Isopropyl ether	Ave	3.601	3.816		2.11	1.99	6.0	30.0
cis-1,2-Dichloroethene	Ave	1.323	1.259		1.90	1.99	-4.8	30.0
Ethyl acetate	Ave	1.982	2.022		2.03	1.99	2.0	30.0
Chloroform	Ave	2.603	2.835		2.17	1.99	8.9	30.0
Tert-butyl ethyl ether	Ave	3.235	3.512		2.16	1.99	8.5	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4620/2 Calibration Date: 04/06/2016 12:02  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GCCVD05C.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Tetrahydrofuran	Ave	1.129	1.251		2.21	1.99	10.8	30.0
1,1,1-Trichloroethane	Ave	2.855	3.142		2.19	1.99	10.1	30.0
1,2-Dichloroethane	Ave	0.3437	0.3676		2.13	1.99	7.0	30.0
1-Butanol	Ave	0.0917	0.0711		1.54	1.99	-22.5	30.0
Benzene	Ave	0.7697	0.7388		1.91	1.99	-4.0	30.0
Cyclohexane	Ave	0.1388	0.1318		1.89	1.99	-5.0	30.0
Carbon tetrachloride	Ave	0.6398	0.6336		1.97	1.99	-1.0	30.0
2,3-Dimethylpentane	Ave	0.1977	0.1639		1.65	1.99	-17.1	30.0
Thiophene	Ave	0.4367	0.4084		1.86	1.99	-6.5	30.0
Tert-amyl methyl ether	Ave	0.7265	0.6615		1.81	1.99	-9.0	30.0
2,2,4-Trimethylpentane	Ave	1.252	1.221		1.94	1.99	-2.4	30.0
Heptane	Ave	0.2905	0.2743		1.88	1.99	-5.6	30.0
1,2-Dichloropropane	Ave	0.2713	0.2742		2.01	1.99	1.1	30.0
Trichloroethene	Ave	0.3928	0.2991		1.52	1.99	-23.8	30.0
Dibromomethane	Ave	0.3094	0.2758		1.78	1.99	-10.9	30.0
Bromodichloromethane	Ave	0.5339	0.5548		2.07	1.99	3.9	30.0
1,4-Dioxane	Ave	0.1132	0.0788		1.39	1.99	-30.4*	30.0
Methyl methacrylate	Ave	0.3750	0.2581		1.37	1.99	-31.2*	30.0
Methylcyclohexane	Ave	0.6456	0.4617		1.42	1.99	-28.5	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.4627	0.3823		1.65	1.99	-17.4	30.0
cis-1,3-Dichloropropene	Ave	0.3664	0.3773		2.05	1.99	3.0	30.0
trans-1,3-Dichloropropene	Ave	0.3244	0.3319		2.04	1.99	2.3	30.0
Toluene	Ave	0.8698	0.8651		1.98	1.99	-0.5	30.0
1,1,2-Trichloroethane	Ave	0.2487	0.2389		1.91	1.99	-3.9	30.0
2-Methylthiophene	Ave	0.6846	0.6823		1.98	1.99	-0.3	30.0
3-Methylthiophene	Ave	0.6465	0.6865		2.11	1.99	6.2	30.0
2-Hexanone	Ave	0.2346	0.1799		1.53	1.99	-23.3	30.0
Octane	Ave	0.3337	0.3096		1.85	1.99	-7.2	30.0
Dibromochloromethane	Ave	0.5198	0.4984		1.91	1.99	-4.1	30.0
1,2-Dibromoethane (EDB)	Ave	0.3913	0.3611		1.84	1.99	-7.7	30.0
Tetrachloroethene	Ave	0.3468	0.3118		1.79	1.99	-10.1	30.0
Chlorobenzene	Ave	0.6285	0.5719		1.81	1.99	-9.0	30.0
2,3-Dimethylheptane	Ave	0.8086	0.8753		2.16	1.99	8.3	30.0
Ethylbenzene	Ave	1.074	1.050		1.95	1.99	-2.2	30.0
2-Ethylthiophene	Ave	0.7569	0.7509		1.98	1.99	-0.8	30.0
m-Xylene & p-Xylene	Ave	0.8142	0.8193		4.01	3.98	0.6	30.0
Bromoform	Ave	0.5168	0.4114		1.59	1.99	-20.4	30.0
Nonane	Ave	0.4915	0.5359		2.17	1.99	9.0	30.0
Styrene	Ave	0.5648	0.5017		1.77	1.99	-11.2	30.0
o-Xylene	Ave	0.9102	0.8735		1.91	1.99	-4.0	30.0
1,1,2,2-Tetrachloroethane	Ave	0.6272	0.5779		1.84	1.99	-7.9	30.0



FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4620/2 Calibration Date: 04/06/2016 12:02  
 Instrument ID: MG Calib Start Date: 01/07/2016 19:02  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 01/08/2016 00:44  
 Lab File ID: GCCVD05C.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2,3-Trichloropropane	Ave	0.1883	0.1668		1.76	1.99	-11.4	30.0
Isopropylbenzene	Ave	1.272	1.225		1.92	1.99	-3.7	30.0
Propylbenzene	Ave	0.3355	0.2876		1.71	1.99	-14.3	30.0
2-Chlorotoluene	Ave	0.3147	0.2749		1.74	1.99	-12.6	30.0
4-Ethyltoluene	Ave	1.138	0.9591		1.68	1.99	-15.7	30.0
1,3,5-Trimethylbenzene	Ave	0.5940	0.4898		1.64	1.99	-17.6	30.0
Alpha Methyl Styrene	Ave	0.4414	0.3589		1.62	1.99	-18.7	30.0
Decane	Ave	0.5233	0.5689		2.16	1.99	8.7	30.0
tert-Butylbenzene	Ave	1.130	0.9858		1.74	1.99	-12.7	30.0
1,2,4-Trimethylbenzene	Ave	0.9712	0.8816		1.81	1.99	-9.2	30.0
sec-Butylbenzene	Ave	1.412	1.294		1.83	1.99	-8.3	30.0
1,3-Dichlorobenzene	Ave	0.5997	0.4560		1.51	1.99	-24.0	30.0
Benzyl chloride	Ave	0.6303	0.5856		1.85	1.99	-7.1	30.0
1,4-Dichlorobenzene	Ave	0.5504	0.4085		1.48	1.99	-25.8	30.0
4-Isopropyltoluene	Ave	1.121	0.9822		1.74	1.99	-12.4	30.0
1,2,3-Trimethylbenzene	Ave	0.7453	0.7172		1.92	1.99	-3.8	30.0
Butylcyclohexane	Ave	0.7645	0.7025		1.83	1.99	-8.1	30.0
1,2-Dichlorobenzene	Ave	0.6093	0.4682		1.53	1.99	-23.2	30.0
Indane	Ave	0.8961	0.7061		1.57	1.99	-21.2	30.0
Indene	LinF		0.6324		1.92	1.99	-3.7	30.0
Butylbenzene	Ave	0.8932	0.8665		1.93	1.99	-3.0	30.0
Undecane	Ave	0.4552	0.4143		1.81	1.99	-9.0	30.0
1,2-Dimethyl-4-Ethylbenzene	QuaF		0.7603		1.81	1.99	-8.9	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.2277	0.1244		1.09	1.99	-45.4*	30.0
1,2,4,5-Tetramethylbenzene	Ave	0.8091	0.7615		1.87	1.99	-5.9	30.0
1,2,3,5-Tetramethylbenzene	Ave	0.4907	0.4657		1.89	1.99	-5.1	30.0
1,2,3,4-Tetramethylbenzene	Ave	0.6124	0.5781		1.88	1.99	-5.6	30.0
Dodecane	Ave	0.3912	0.3351		1.71	1.99	-14.3	30.0
1,2,4-Trichlorobenzene	Ave	0.3438	0.2373		1.37	1.99	-31.0*	30.0
Napthalene	Ave	0.6467	0.6306		1.94	1.99	-2.5	30.0
Benzo (b) thiophene	Ave	0.3761	0.3807		2.02	1.99	1.2	30.0
Hexachlorobutadiene	Ave	0.4724	0.2577		1.09	1.99	-45.4*	30.0
1,2,3-Trichlorobenzene	Ave	0.3159	0.2368		1.49	1.99	-25.0	30.0
2-Methylnaphthalene	Ave	0.1665	0.1190		4.45	6.22	-28.5	50.0
1-Methylnaphthalene	Ave	0.1433	0.1109		4.82	6.22	-22.6	50.0
4-Bromofluorobenzene (Surr)	Ave	0.6713	0.7365		4.39	4.00	9.7	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-3621/12 Calibration Date: 10/29/2015 22:54  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RJ29ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorodifluoromethane	Ave	0.3468	0.3265		1.88	2.00	-5.9	35.0
Propene	Ave	1.381	1.043		1.51	2.00	-24.5	35.0
Dichlorodifluoromethane	Ave	3.057	2.465		1.61	2.00	-19.4	35.0
Chloromethane	Ave	0.4474	0.3819		1.71	2.00	-14.6	35.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	2.744	2.536		1.85	2.00	-7.6	35.0
Acetaldehyde	Ave	0.8319	0.4637		5.58	10.0	-44.3*	35.0
Vinyl chloride	Ave	1.477	1.303		1.77	2.00	-11.8	35.0
1,3-Butadiene	Ave	1.166	1.026		1.76	2.00	-12.1	35.0
Butane	Ave	1.974	1.821		1.85	2.00	-7.7	35.0
Bromomethane	Ave	1.415	1.225		1.73	2.00	-13.4	35.0
Chloroethane	Ave	0.7397	0.6572		1.78	2.00	-11.2	35.0
Ethanol	Ave	0.3923	0.3243		8.27	10.0	-17.3	35.0
Vinyl bromide	Ave	1.377	1.355		1.97	2.00	-1.6	35.0
2-Methylbutane	Ave	1.555	1.538		1.98	2.00	-1.1	35.0
Acrolein	Ave	0.5039	0.5993		2.38	2.00	18.9	35.0
Trichlorofluoromethane	Ave	3.529	3.376		1.91	2.00	-4.4	35.0
Acetonitrile	Ave	0.5905	0.5262		1.78	2.00	-10.9	35.0
Acetone	Ave	0.9331	0.7005		4.51	6.00	-24.9	35.0
Isopropyl alcohol	Ave	1.942	1.564		4.83	6.00	-19.5	35.0
Pentane	Ave	0.2686	0.2924		2.18	2.00	8.9	35.0
Ethyl ether	Ave	1.335	1.297		1.94	2.00	-2.8	35.0
1,1-Dichloroethene	Ave	1.392	1.361		1.96	2.00	-2.2	35.0
Acrylonitrile	Ave	1.065	1.062		2.00	2.00	-0.2	35.0
tert-Butyl alcohol	Ave	2.583	2.516		1.95	2.00	-2.6	35.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	2.988	2.935		1.97	2.00	-1.8	35.0
Methylene Chloride	Ave	1.348	1.575		2.34	2.00	16.9	35.0
3-Chloropropene	Ave	1.198	1.030		1.72	2.00	-14.0	35.0
Carbon disulfide	Ave	3.992	3.799		1.90	2.00	-4.8	35.0
trans-1,2-Dichloroethene	Ave	1.449	1.400		1.93	2.00	-3.4	35.0
2-Methylpentane	Ave	2.828	3.006		2.13	2.00	6.3	35.0
Methyl tert-butyl ether	Ave	3.658	3.607		1.97	2.00	-1.4	35.0
1,1-Dichloroethane	Ave	2.592	2.507		1.94	2.00	-3.3	35.0
Vinyl acetate	Ave	3.641	3.662		2.01	2.00	0.6	35.0
2-Butanone (MEK)	Ave	0.8144	0.6884		1.69	2.00	-15.5	35.0
Hexane	Ave	1.157	1.153		1.99	2.00	-0.4	35.0
Isopropyl ether	Ave	4.913	4.868		1.98	2.00	-0.9	35.0
cis-1,2-Dichloroethene	Ave	1.495	1.488		1.99	2.00	-0.5	35.0
Ethyl acetate	Ave	3.102	2.850		1.84	2.00	-8.1	35.0
Chloroform	Ave	2.933	2.801		1.91	2.00	-4.5	35.0
Tert-butyl ethyl ether	Ave	4.209	4.973		2.36	2.00	18.1	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-3621/12 Calibration Date: 10/29/2015 22:54  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RJ29ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Tetrahydrofuran	Ave	1.533	1.477		1.93	2.00	-3.7	35.0
1,1,1-Trichloroethane	Ave	2.823	2.786		1.97	2.00	-1.3	35.0
1,2-Dichloroethane	Ave	0.3736	0.3630		1.94	2.00	-2.8	35.0
1-Butanol	Ave	0.0940	0.0932		1.99	2.00	-0.8	35.0
Benzene	Ave	0.8488	0.8531		2.01	2.00	0.5	35.0
Cyclohexane	Ave	0.1281	0.1292		2.02	2.00	0.8	35.0
Carbon tetrachloride	Ave	0.5469	0.5747		2.10	2.00	5.1	35.0
2,3-Dimethylpentane	Ave	0.1890	0.1778		1.88	2.00	-5.9	35.0
Thiophene	Ave	0.4690	0.4944		2.11	2.00	5.4	35.0
Tert-amyl methyl ether	Ave	0.7829	0.8453		2.16	2.00	8.0	35.0
2,2,4-Trimethylpentane	Ave	1.416	1.429		2.02	2.00	1.0	35.0
Heptane	Ave	0.2964	0.3024		2.04	2.00	2.0	35.0
1,2-Dichloropropane	Ave	0.3316	0.3304		1.99	2.00	-0.4	35.0
Trichloroethene	Ave	0.4001	0.4127		2.06	2.00	3.1	35.0
Dibromomethane	Ave	0.3413	0.3419		2.00	2.00	0.2	35.0
Bromodichloromethane	Ave	0.5734	0.5783		2.02	2.00	0.9	35.0
1,4-Dioxane	Ave	0.1299	0.1303		2.01	2.00	0.3	35.0
Methyl methacrylate	Ave	0.3544	0.3477		1.96	2.00	-1.9	35.0
Methylcyclohexane	Ave	0.6115	0.5043		1.65	2.00	-17.5	35.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8079	0.6960		1.72	2.00	-13.8	35.0
cis-1,3-Dichloropropene	Ave	0.4758	0.4955		2.08	2.00	4.1	35.0
trans-1,3-Dichloropropene	Ave	0.4617	0.4856		2.10	2.00	5.2	35.0
Toluene	Ave	1.086	1.166		2.15	2.00	7.4	35.0
1,1,2-Trichloroethane	Ave	0.3200	0.3188		1.99	2.00	-0.4	35.0
2-Methylthiophene	Ave	0.8830	0.9622		2.18	2.00	9.0	35.0
3-Methylthiophene	Ave	0.8722	0.9822		2.25	2.00	12.6	35.0
2-Hexanone	Ave	0.3824	0.3788		1.98	2.00	-0.9	35.0
Dibromochloromethane	Ave	0.6340	0.6677		2.11	2.00	5.3	35.0
Octane	Ave	0.3604	0.3792		2.11	2.00	5.2	35.0
1,2-Dibromoethane (EDB)	Ave	0.5950	0.6196		2.08	2.00	4.1	35.0
Tetrachloroethene	Ave	0.3959	0.4122		2.08	2.00	4.1	35.0
Chlorobenzene	Ave	0.8860	0.9121		2.06	2.00	2.9	35.0
2,3-Dimethylheptane	Ave	0.9157	0.9457		2.07	2.00	3.3	35.0
Ethylbenzene	Ave	1.417	1.447		2.04	2.00	2.1	35.0
2-Ethylthiophene	Ave	1.041	1.075		2.07	2.00	3.3	35.0
m-Xylene & p-Xylene	Ave	1.090	1.131		4.15	4.00	3.7	35.0
Bromoform	Ave	0.5920	0.6199		2.10	2.00	4.7	35.0
Styrene	Ave	0.8010	0.8714		2.18	2.00	8.8	35.0
Nonane	Ave	0.7217	0.7537		2.09	2.00	4.4	35.0
o-Xylene	Ave	1.130	1.140		2.02	2.00	0.9	35.0
1,1,2,2-Tetrachloroethane	Ave	0.8121	0.8070		1.99	2.00	-0.6	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 140-3621/12 Calibration Date: 10/29/2015 22:54  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RJ29ICV.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2,3-Trichloropropane	Ave	0.2467	0.2520		2.04	2.00	2.2	35.0
Isopropylbenzene	Ave	1.605	1.669		2.08	2.00	4.0	35.0
Propylbenzene	Ave	0.4601	0.4837		2.10	2.00	5.1	35.0
2-Chlorotoluene	Ave	0.4165	0.4379		2.10	2.00	5.1	35.0
4-Ethyltoluene	Ave	1.587	1.514		1.91	2.00	-4.6	35.0
1,3,5-Trimethylbenzene	Ave	0.7610	0.7956		2.09	2.00	4.6	35.0
Alpha Methyl Styrene	Ave	0.6483	0.6786		2.09	2.00	4.7	35.0
Decane	Ave	0.9320	0.9557		2.05	2.00	2.5	35.0
tert-Butylbenzene	Ave	1.451	1.489		2.05	2.00	2.7	35.0
1,2,4-Trimethylbenzene	Ave	1.346	1.355		2.01	2.00	0.7	35.0
1,3-Dichlorobenzene	Ave	0.9689	0.9633		1.99	2.00	-0.6	35.0
sec-Butylbenzene	Ave	1.955	1.988		2.03	2.00	1.7	35.0
Benzyl chloride	Ave	1.223	1.211		1.98	2.00	-1.0	35.0
1,4-Dichlorobenzene	Ave	1.000	0.9773		1.96	2.00	-2.3	35.0
4-Isopropyltoluene	Ave	1.760	1.779		2.02	2.00	1.1	35.0
1,2,3-Trimethylbenzene	Ave	1.086	1.177		2.17	2.00	8.4	35.0
Butylcyclohexane	Ave	1.038	1.028		1.98	2.00	-0.9	35.0
1,2-Dichlorobenzene	Ave	0.9528	0.9273		1.95	2.00	-2.7	35.0
Indane	Ave	1.317	1.257		1.91	2.00	-4.5	35.0
Indene	Ave	0.9563	1.251		2.62	2.00	30.9	35.0
Butylbenzene	Ave	1.626	1.611		1.98	2.00	-0.9	35.0
1,2-Dimethyl-4-Ethylbenzene	Ave	1.294	1.636		2.53	2.00	26.4	35.0
1,2-Dibromo-3-Chloropropane	Ave	0.4204	0.3075		1.46	2.00	-26.8	35.0
Undecane	Ave	1.073	1.083		2.02	2.00	0.9	35.0
1,2,4,5-Tetramethylbenzene	Ave	1.487	1.647		2.22	2.00	10.7	35.0
1,2,3,5-Tetramethylbenzene	Ave	0.9029	1.030		2.28	2.00	14.1	35.0
1,2,3,4-Tetramethylbenzene	Ave	1.239	1.351		2.18	2.00	9.0	35.0
Dodecane	Ave	1.005	1.028		2.05	2.00	2.3	35.0
1,2,4-Trichlorobenzene	Ave	0.8701	0.8001		1.84	2.00	-8.0	35.0
Naphthalene	Ave	2.038	1.710		1.68	2.00	-16.1	35.0
Benzo (b) thiophene	Ave	1.192	1.284		2.16	2.00	7.7	35.0
Hexachlorobutadiene	Ave	0.6625	0.6619		2.00	2.00	-0.0	35.0
1,2,3-Trichlorobenzene	Ave	0.8332	0.7683		1.85	2.00	-7.8	35.0
2-Methylnaphthalene	Ave	0.2735	0.3756		8.59	6.25	37.3	50.0
1-Methylnaphthalene	Ave	0.2158	0.2963		8.58	6.25	37.3	50.0
4-Bromofluorobenzene (Surr)	Ave	0.7387	0.7306		3.96	4.00	-1.1	35.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4612/6 Calibration Date: 04/07/2016 10:48  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD07.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorodifluoromethane	Ave	0.3468	0.3754		2.16	1.99	8.2	30.0
Propene	Ave	1.381	1.354		1.95	1.99	-2.0	30.0
Dichlorodifluoromethane	Ave	3.057	2.724		1.77	1.99	-10.9	30.0
Chloromethane	Ave	0.4474	0.5157		2.30	1.99	15.3	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	2.744	2.730		1.98	1.99	-0.5	30.0
Acetaldehyde	Ave	0.8319	0.6238		7.47	9.96	-25.0	30.0
Vinyl chloride	Ave	1.477	1.647		2.22	1.99	11.5	30.0
1,3-Butadiene	Ave	1.166	1.324		2.26	1.99	13.6	30.0
Butane	Ave	1.974	2.520		2.54	1.99	27.7	30.0
Bromomethane	Ave	1.415	1.408		1.98	1.99	-0.5	30.0
Chloroethane	Ave	0.7397	0.7815		2.10	1.99	5.7	30.0
Ethanol	Ave	0.3923	0.4955		12.6	9.96	26.3	30.0
Vinyl bromide	Ave	1.377	1.408		2.04	1.99	2.3	30.0
2-Methylbutane	Ave	1.555	1.870		2.40	1.99	20.3	30.0
Acrolein	Ave	0.5039	0.6228		2.46	1.99	23.6	30.0
Trichlorofluoromethane	Ave	3.529	3.650		2.06	1.99	3.4	30.0
Acetonitrile	Ave	0.5905	0.7015		2.37	1.99	18.8	30.0
Acetone	Ave	0.9331	0.7834		5.02	5.97	-16.0	30.0
Isopropyl alcohol	Ave	1.942	2.257		6.94	5.97	16.2	30.0
Pentane	Ave	0.2686	0.2842		2.11	1.99	5.8	30.0
Ethyl ether	Ave	1.335	1.618		2.41	1.99	21.2	30.0
1,1-Dichloroethene	Ave	1.392	1.340		1.92	1.99	-3.7	30.0
Acrylonitrile	Ave	1.065	1.222		2.29	1.99	14.8	30.0
tert-Butyl alcohol	Ave	2.583	2.711		2.09	1.99	5.0	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	2.988	3.037		2.02	1.99	1.6	30.0
Methylene Chloride	Ave	1.348	1.295		1.91	1.99	-3.9	30.0
3-Chloropropene	Ave	1.198	1.339		2.23	1.99	11.8	30.0
Carbon disulfide	Ave	3.992	4.013		2.00	1.99	0.5	30.0
trans-1,2-Dichloroethene	Ave	1.449	1.400		1.92	1.99	-3.4	30.0
2-Methylpentane	Ave	2.828	3.584		2.52	1.99	26.7	30.0
Methyl tert-butyl ether	Ave	3.658	3.767		2.05	1.99	3.0	30.0
1,1-Dichloroethane	Ave	2.592	2.767		2.13	1.99	6.8	30.0
Vinyl acetate	Ave	3.641	4.241		2.32	1.99	16.5	30.0
2-Butanone (MEK)	Ave	0.8144	0.6890		1.68	1.99	-15.4	30.0
Hexane	Ave	1.157	1.286		2.21	1.99	11.1	30.0
Isopropyl ether	Ave	4.913	5.576		2.26	1.99	13.5	30.0
cis-1,2-Dichloroethene	Ave	1.495	1.479		1.97	1.99	-1.0	30.0
Ethyl acetate	Ave	3.102	3.403		2.18	1.99	9.7	30.0
Chloroform	Ave	2.933	3.027		2.06	1.99	3.2	30.0
Tert-butyl ethyl ether	Ave	4.209	4.753		2.25	1.99	12.9	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4612/6 Calibration Date: 04/07/2016 10:48  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD07.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Tetrahydrofuran	Ave	1.533	1.802		2.34	1.99	17.5	30.0
1,1,1-Trichloroethane	Ave	2.823	2.938		2.07	1.99	4.1	30.0
1,2-Dichloroethane	Ave	0.3736	0.4106		2.19	1.99	9.9	30.0
1-Butanol	Ave	0.0940	0.1031		2.19	1.99	9.8	30.0
Benzene	Ave	0.8488	0.8715		2.04	1.99	2.7	30.0
Cyclohexane	Ave	0.1281	0.1334		2.07	1.99	4.1	30.0
Carbon tetrachloride	Ave	0.5469	0.6285		2.29	1.99	14.9	30.0
2,3-Dimethylpentane	Ave	0.1890	0.1805		1.90	1.99	-4.5	30.0
Thiophene	Ave	0.4690	0.4969		2.11	1.99	5.9	30.0
Tert-amyl methyl ether	Ave	0.7829	0.8001		2.04	1.99	2.2	30.0
2,2,4-Trimethylpentane	Ave	1.416	1.550		2.18	1.99	9.5	30.0
1,2-Dichloropropane	Ave	0.3316	0.3574		2.15	1.99	7.8	30.0
Heptane	Ave	0.2964	0.3049		2.05	1.99	2.9	30.0
Trichloroethene	Ave	0.4001	0.4048		2.01	1.99	1.2	30.0
Dibromomethane	Ave	0.3413	0.3526		2.06	1.99	3.3	30.0
Bromodichloromethane	Ave	0.5734	0.6151		2.14	1.99	7.3	30.0
1,4-Dioxane	Ave	0.1299	0.1290		1.98	1.99	-0.7	30.0
Methyl methacrylate	Ave	0.3544	0.4235		2.38	1.99	19.5	30.0
Methylcyclohexane	Ave	0.6115	0.4934		1.61	1.99	-19.3	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8079	0.7872		1.94	1.99	-2.6	30.0
cis-1,3-Dichloropropene	Ave	0.4758	0.5118		2.14	1.99	7.6	30.0
trans-1,3-Dichloropropene	Ave	0.4617	0.5162		2.23	1.99	11.8	30.0
Toluene	Ave	1.086	1.168		2.14	1.99	7.6	30.0
1,1,2-Trichloroethane	Ave	0.3200	0.3338		2.08	1.99	4.3	30.0
2-Methylthiophene	Ave	0.8830	0.9583		2.16	1.99	8.5	30.0
3-Methylthiophene	Ave	0.8722	0.9780		2.23	1.99	12.1	30.0
2-Hexanone	Ave	0.3824	0.4058		2.11	1.99	6.1	30.0
Dibromochloromethane	Ave	0.6340	0.6809		2.14	1.99	7.4	30.0
Octane	Ave	0.3604	0.3856		2.13	1.99	7.0	30.0
1,2-Dibromoethane (EDB)	Ave	0.5950	0.6157		2.06	1.99	3.5	30.0
Tetrachloroethene	Ave	0.3959	0.4010		2.02	1.99	1.3	30.0
Chlorobenzene	Ave	0.8860	0.8968		2.02	1.99	1.2	30.0
2,3-Dimethylheptane	Ave	0.9157	1.134		2.47	1.99	23.8	30.0
Ethylbenzene	Ave	1.417	1.457		2.05	1.99	2.8	30.0
2-Ethylthiophene	Ave	1.041	1.058		2.02	1.99	1.6	30.0
m-Xylene & p-Xylene	Ave	1.090	1.148		4.20	3.98	5.3	30.0
Bromoform	Ave	0.5920	0.5987		2.01	1.99	1.1	30.0
Styrene	Ave	0.8010	0.8491		2.11	1.99	6.0	30.0
Nonane	Ave	0.7217	0.8372		2.31	1.99	16.0	30.0
o-Xylene	Ave	1.130	1.177		2.07	1.99	4.2	30.0
1,1,2,2-Tetrachloroethane	Ave	0.8121	0.7999		1.96	1.99	-1.5	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4612/6 Calibration Date: 04/07/2016 10:48  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD07.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2,3-Trichloropropane	Ave	0.2467	0.2503		2.02	1.99	1.5	30.0
Isopropylbenzene	Ave	1.605	1.705		2.12	1.99	6.2	30.0
Propylbenzene	Ave	0.4601	0.4697		2.03	1.99	2.1	30.0
2-Chlorotoluene	Ave	0.4165	0.4229		2.02	1.99	1.5	30.0
4-Ethyltoluene	Ave	1.587	1.541		1.93	1.99	-2.9	30.0
1,3,5-Trimethylbenzene	Ave	0.7610	0.7696		2.01	1.99	1.1	30.0
Alpha Methyl Styrene	Ave	0.6483	0.6441		1.98	1.99	-0.7	30.0
Decane	Ave	0.9320	1.057		2.26	1.99	13.4	30.0
tert-Butylbenzene	Ave	1.451	1.483		2.04	1.99	2.2	30.0
1,2,4-Trimethylbenzene	Ave	1.346	1.394		2.06	1.99	3.5	30.0
1,3-Dichlorobenzene	Ave	0.9689	0.9167		1.88	1.99	-5.4	30.0
sec-Butylbenzene	Ave	1.955	2.057		2.10	1.99	5.2	30.0
Benzyl chloride	Ave	1.223	1.281		2.09	1.99	4.7	30.0
1,4-Dichlorobenzene	Ave	1.000	0.9546		1.90	1.99	-4.5	30.0
4-Isopropyltoluene	Ave	1.760	1.793		2.03	1.99	1.9	30.0
1,2,3-Trimethylbenzene	Ave	1.086	1.193		2.19	1.99	9.9	30.0
Butylcyclohexane	Ave	1.038	1.070		2.05	1.99	3.1	30.0
1,2-Dichlorobenzene	Ave	0.9528	0.9031		1.89	1.99	-5.2	30.0
Indane	Ave	1.317	1.253		1.89	1.99	-4.9	30.0
Indene	Ave	0.9563	1.220		2.54	1.99	27.6	30.0
Butylbenzene	Ave	1.626	1.754		2.15	1.99	7.8	30.0
1,2-Dimethyl-4-Ethylbenzene	Ave	1.294	1.596		2.46	1.99	23.3	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.4204	0.2942		1.39	1.99	-30.0	30.0
Undecane	Ave	1.073	1.235		2.29	1.99	15.1	30.0
1,2,4,5-Tetramethylbenzene	Ave	1.487	1.600		2.14	1.99	7.6	30.0
1,2,3,5-Tetramethylbenzene	Ave	0.9029	0.9913		2.19	1.99	9.8	30.0
1,2,3,4-Tetramethylbenzene	Ave	1.239	1.259		2.02	1.99	1.7	30.0
Dodecane	Ave	1.005	1.052		2.08	1.99	4.7	30.0
1,2,4-Trichlorobenzene	Ave	0.8701	0.7056		1.61	1.99	-18.9	30.0
Naphthalene	Ave	2.038	1.646		1.61	1.99	-19.2	30.0
Benzo (b) thiophene	Ave	1.192	1.008		1.68	1.99	-15.4	30.0
Hexachlorobutadiene	Ave	0.6625	0.5841		1.76	1.99	-11.8	30.0
1,2,3-Trichlorobenzene	Ave	0.8332	0.6230		1.49	1.99	-25.2	30.0
2-Methylnaphthalene	Ave	0.2735	0.1917		4.36	6.22	-29.9	50.0
1-Methylnaphthalene	Ave	0.2158	0.1603		4.62	6.22	-25.7	50.0
4-Bromofluorobenzene (Surr)	Ave	0.7387	0.7550		4.09	4.00	2.2	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4613/2 Calibration Date: 04/08/2016 10:46  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD08.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorodifluoromethane	Ave	0.3468	0.3801		2.19	2.00	9.6	30.0
Propene	Ave	1.381	1.365		1.98	2.00	-1.2	30.0
Dichlorodifluoromethane	Ave	3.057	2.732		1.79	2.00	-10.6	30.0
Chloromethane	Ave	0.4474	0.5049		2.26	2.00	12.9	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	2.744	2.715		1.98	2.00	-1.1	30.0
Acetaldehyde	Ave	0.8319	0.6199		7.45	10.0	-25.5	30.0
Vinyl chloride	Ave	1.477	1.640		2.22	2.00	11.0	30.0
1,3-Butadiene	Ave	1.166	1.328		2.28	2.00	13.9	30.0
Butane	Ave	1.974	2.503		2.54	2.00	26.8	30.0
Bromomethane	Ave	1.415	1.373		1.94	2.00	-3.0	30.0
Chloroethane	Ave	0.7397	0.7746		2.09	2.00	4.7	30.0
Ethanol	Ave	0.3923	0.4839		12.3	10.0	23.3	30.0
Vinyl bromide	Ave	1.377	1.395		2.03	2.00	1.3	30.0
2-Methylbutane	Ave	1.555	1.849		2.38	2.00	18.9	30.0
Acrolein	Ave	0.5039	0.6308		2.50	2.00	25.2	30.0
Trichlorofluoromethane	Ave	3.529	3.647		2.07	2.00	3.3	30.0
Acetonitrile	Ave	0.5905	0.7055		2.39	2.00	19.5	30.0
Acetone	Ave	0.9331	0.7858		5.05	6.00	-15.8	30.0
Isopropyl alcohol	Ave	1.942	2.245		6.94	6.00	15.6	30.0
Pentane	Ave	0.2686	0.2826		2.10	2.00	5.2	30.0
Ethyl ether	Ave	1.335	1.601		2.40	2.00	20.0	30.0
1,1-Dichloroethene	Ave	1.392	1.353		1.94	2.00	-2.8	30.0
Acrylonitrile	Ave	1.065	1.248		2.34	2.00	17.2	30.0
tert-Butyl alcohol	Ave	2.583	2.762		2.14	2.00	6.9	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	2.988	3.071		2.06	2.00	2.8	30.0
Methylene Chloride	Ave	1.348	1.307		1.94	2.00	-3.0	30.0
3-Chloropropene	Ave	1.198	1.332		2.22	2.00	11.2	30.0
Carbon disulfide	Ave	3.992	4.032		2.02	2.00	1.0	30.0
trans-1,2-Dichloroethene	Ave	1.449	1.399		1.93	2.00	-3.4	30.0
2-Methylpentane	Ave	2.828	3.659		2.59	2.00	29.4	30.0
Methyl tert-butyl ether	Ave	3.658	3.800		2.08	2.00	3.9	30.0
1,1-Dichloroethane	Ave	2.592	2.766		2.13	2.00	6.7	30.0
Vinyl acetate	Ave	3.641	4.214		2.31	2.00	15.7	30.0
2-Butanone (MEK)	Ave	0.8144	0.7029		1.73	2.00	-13.7	30.0
Hexane	Ave	1.157	1.287		2.22	2.00	11.2	30.0
Isopropyl ether	Ave	4.913	5.606		2.28	2.00	14.1	30.0
cis-1,2-Dichloroethene	Ave	1.495	1.501		2.01	2.00	0.4	30.0
Ethyl acetate	Ave	3.102	3.400		2.19	2.00	9.6	30.0
Chloroform	Ave	2.933	3.050		2.08	2.00	4.0	30.0
Tert-butyl ethyl ether	Ave	4.209	4.806		2.28	2.00	14.2	30.0



FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4613/2 Calibration Date: 04/08/2016 10:46  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD08.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Tetrahydrofuran	Ave	1.533	1.811		2.36	2.00	18.1	30.0
1,1,1-Trichloroethane	Ave	2.823	2.970		2.10	2.00	5.2	30.0
1,2-Dichloroethane	Ave	0.3736	0.4129		2.21	2.00	10.5	30.0
1-Butanol	Ave	0.0940	0.1034		2.20	2.00	10.0	30.0
Benzene	Ave	0.8488	0.8743		2.06	2.00	3.0	30.0
Cyclohexane	Ave	0.1281	0.1340		2.09	2.00	4.6	30.0
Carbon tetrachloride	Ave	0.5469	0.6353		2.32	2.00	16.2	30.0
2,3-Dimethylpentane	Ave	0.1890	0.1808		1.91	2.00	-4.4	30.0
Thiophene	Ave	0.4690	0.4987		2.13	2.00	6.3	30.0
Tert-amyl methyl ether	Ave	0.7829	0.8023		2.05	2.00	2.5	30.0
2,2,4-Trimethylpentane	Ave	1.416	1.561		2.21	2.00	10.3	30.0
Heptane	Ave	0.2964	0.3061		2.07	2.00	3.3	30.0
1,2-Dichloropropane	Ave	0.3316	0.3578		2.16	2.00	7.9	30.0
Trichloroethene	Ave	0.4001	0.4140		2.07	2.00	3.5	30.0
Dibromomethane	Ave	0.3413	0.3542		2.08	2.00	3.8	30.0
1,4-Dioxane	Ave	0.1299	0.1300		2.00	2.00	0.1	30.0
Bromodichloromethane	Ave	0.5734	0.6201		2.16	2.00	8.1	30.0
Methyl methacrylate	Ave	0.3544	0.4222		2.38	2.00	19.1	30.0
Methylcyclohexane	Ave	0.6115	0.4962		1.62	2.00	-18.9	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8079	0.7828		1.94	2.00	-3.1	30.0
cis-1,3-Dichloropropene	Ave	0.4758	0.5110		2.15	2.00	7.4	30.0
trans-1,3-Dichloropropene	Ave	0.4617	0.5196		2.25	2.00	12.5	30.0
Toluene	Ave	1.086	1.176		2.17	2.00	8.3	30.0
1,1,2-Trichloroethane	Ave	0.3200	0.3374		2.11	2.00	5.5	30.0
2-Methylthiophene	Ave	0.8830	0.9617		2.18	2.00	8.9	30.0
3-Methylthiophene	Ave	0.8722	0.9862		2.26	2.00	13.1	30.0
2-Hexanone	Ave	0.3824	0.4074		2.13	2.00	6.5	30.0
Dibromochloromethane	Ave	0.6340	0.6938		2.19	2.00	9.4	30.0
Octane	Ave	0.3604	0.3861		2.14	2.00	7.1	30.0
1,2-Dibromoethane (EDB)	Ave	0.5950	0.6218		2.09	2.00	4.5	30.0
Tetrachloroethene	Ave	0.3959	0.4048		2.04	2.00	2.2	30.0
Chlorobenzene	Ave	0.8860	0.8934		2.02	2.00	0.8	30.0
2,3-Dimethylheptane	Ave	0.9157	1.140		2.49	2.00	24.5	30.0
Ethylbenzene	Ave	1.417	1.460		2.06	2.00	3.0	30.0
2-Ethylthiophene	Ave	1.041	1.061		2.04	2.00	1.9	30.0
m-Xylene & p-Xylene	Ave	1.090	1.158		4.25	4.00	6.2	30.0
Bromoform	Ave	0.5920	0.6065		2.05	2.00	2.4	30.0
Styrene	Ave	0.8010	0.8452		2.11	2.00	5.5	30.0
Nonane	Ave	0.7217	0.8382		2.32	2.00	16.1	30.0
o-Xylene	Ave	1.130	1.186		2.10	2.00	5.0	30.0
1,1,2,2-Tetrachloroethane	Ave	0.8121	0.7774		1.91	2.00	-4.3	30.0

FORM VII  
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVIS 140-4613/2 Calibration Date: 04/08/2016 10:46  
 Instrument ID: MR Calib Start Date: 10/29/2015 14:14  
 GC Column: RTX-5 ID: 0.32 (mm) Calib End Date: 10/29/2015 21:11  
 Lab File ID: RCCVD08.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2,3-Trichloropropane	Ave	0.2467	0.2462		2.00	2.00	-0.2	30.0
Isopropylbenzene	Ave	1.605	1.705		2.12	2.00	6.2	30.0
Propylbenzene	Ave	0.4601	0.4668		2.03	2.00	1.5	30.0
2-Chlorotoluene	Ave	0.4165	0.4218		2.03	2.00	1.3	30.0
4-Ethyltoluene	Ave	1.587	1.539		1.94	2.00	-3.0	30.0
1,3,5-Trimethylbenzene	Ave	0.7610	0.7661		2.01	2.00	0.7	30.0
Alpha Methyl Styrene	Ave	0.6483	0.6388		1.97	2.00	-1.5	30.0
Decane	Ave	0.9320	1.053		2.26	2.00	13.0	30.0
tert-Butylbenzene	Ave	1.451	1.489		2.05	2.00	2.6	30.0
1,2,4-Trimethylbenzene	Ave	1.346	1.403		2.08	2.00	4.2	30.0
1,3-Dichlorobenzene	Ave	0.9689	0.9123		1.88	2.00	-5.8	30.0
sec-Butylbenzene	Ave	1.955	2.034		2.08	2.00	4.0	30.0
Benzyl chloride	Ave	1.223	1.267		2.07	2.00	3.6	30.0
1,4-Dichlorobenzene	Ave	1.000	0.9514		1.90	2.00	-4.8	30.0
4-Isopropyltoluene	Ave	1.760	1.779		2.02	2.00	1.1	30.0
1,2,3-Trimethylbenzene	Ave	1.086	1.189		2.19	2.00	9.5	30.0
Butylcyclohexane	Ave	1.038	1.059		2.04	2.00	2.0	30.0
1,2-Dichlorobenzene	Ave	0.9528	0.8919		1.87	2.00	-6.4	30.0
Indane	Ave	1.317	1.241		1.88	2.00	-5.8	30.0
Indene	Ave	0.9563	1.203		2.52	2.00	25.8	30.0
Butylbenzene	Ave	1.626	1.723		2.12	2.00	5.9	30.0
1,2-Dimethyl-4-Ethylbenzene	Ave	1.294	1.574		2.43	2.00	21.7	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.4204	0.2964		1.41	2.00	-29.5	30.0
Undecane	Ave	1.073	1.229		2.29	2.00	14.5	30.0
1,2,4,5-Tetramethylbenzene	Ave	1.487	1.596		2.15	2.00	7.3	30.0
1,2,3,5-Tetramethylbenzene	Ave	0.9029	0.9883		2.19	2.00	9.5	30.0
1,2,3,4-Tetramethylbenzene	Ave	1.239	1.288		2.08	2.00	4.0	30.0
Dodecane	Ave	1.005	1.140		2.27	2.00	13.4	30.0
1,2,4-Trichlorobenzene	Ave	0.8701	0.7485		1.72	2.00	-14.0	30.0
Naphthalene	Ave	2.038	1.775		1.74	2.00	-12.9	30.0
Benzo (b) thiophene	Ave	1.192	1.131		1.90	2.00	-5.1	30.0
Hexachlorobutadiene	Ave	0.6625	0.6019		1.82	2.00	-9.1	30.0
1,2,3-Trichlorobenzene	Ave	0.8332	0.7193		1.73	2.00	-13.7	30.0
2-Methylnaphthalene	Ave	0.2735	0.3141		7.18	6.25	14.8	50.0
1-Methylnaphthalene	Ave	0.2158	0.2863		8.29	6.25	32.6	50.0
4-Bromofluorobenzene (Surr)	Ave	0.7387	0.7586		4.11	4.00	2.7	30.0

FORM IV  
AIR - GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 500BLKD06.D Lab Sample ID: MB 140-4620/7  
 Matrix: Air Heated Purge: (Y/N) N  
 Instrument ID: MG Date Analyzed: 04/06/2016 16:42  
 GC Column: RTX-5 ID: 0.32 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-4620/1002	GCCVD05C-LC S.d	04/06/2016 12:02
SV-170-A	140-4707-2	GD06P105.D	04/06/2016 18:07
SV-171-A	140-4707-5	GD06P108.D	04/06/2016 20:13
SV-174-A	140-4707-6	GD06P109.D	04/06/2016 20:55
SV-175-A	140-4707-7	GD06P110.D	04/06/2016 21:37
SV-176-A	140-4707-8	GD06P111.D	04/06/2016 22:19
SV-168-A	140-4707-10	GD06P113.D	04/07/2016 00:27
SV-DUP-A	140-4707-11	GD06P114.D	04/07/2016 01:09
SV-175-A DL	140-4707-7 DL	GD06P110DL. D	04/07/2016 10:22

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4620/7  
 Matrix: Air Lab File ID: 500BLKD06.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/06/2016 16:42  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.080	0.023
56-23-5	Carbon tetrachloride	153.81	ND		0.080	0.015
75-45-6	Chlorodifluoromethane	86.47	ND		0.080	0.015
67-66-3	Chloroform	119.38	ND		0.080	0.015
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.080	0.024
75-71-8	Dichlorodifluoromethane	120.91	ND		0.080	0.027
75-34-3	1,1-Dichloroethane	98.96	ND		0.080	0.010
107-06-2	1,2-Dichloroethane	98.96	ND		0.080	0.019
75-35-4	1,1-Dichloroethene	96.94	ND		0.080	0.014
100-41-4	Ethylbenzene	106.17	ND		0.080	0.027
75-09-2	Methylene Chloride	84.93	ND		0.20	0.13
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.40	0.068
91-20-3	Naphthalene	128.17	ND		0.040	0.040
127-18-4	Tetrachloroethene	165.83	ND		0.080	0.016
108-88-3	Toluene	92.14	ND		0.12	0.12
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.080	0.020
120-82-1	<del>1,2,4-Trichlorobenzene</del>	<del>181.45</del>	<del>ND</del>		0.080	0.039
71-55-6	1,1,1-Trichloroethane	133.41	0.0136	J	0.080	0.012
79-00-5	<del>1,1,2-Trichloroethane</del>	<del>133.41</del>	<del>ND</del>		0.080	0.021
79-01-6	Trichloroethene	131.39	ND		0.040	0.014
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.080	0.034
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.080	0.025
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.080	0.026
75-01-4	Vinyl chloride	62.50	ND		0.040	0.029
1330-20-7	Xylenes, Total	106.17	ND		0.16	0.024

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4620/7  
 Matrix: Air Lab File ID: 500BLKD06.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/06/2016 16:42  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.26	0.073
56-23-5	Carbon tetrachloride	153.81	ND		0.50	0.094
75-45-6	Chlorodifluoromethane	86.47	ND		0.28	0.053
67-66-3	Chloroform	119.38	ND		0.39	0.073
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.32	0.095
75-71-8	Dichlorodifluoromethane	120.91	ND		0.40	0.13
75-34-3	1,1-Dichloroethane	98.96	ND		0.32	0.040
107-06-2	1,2-Dichloroethane	98.96	ND		0.32	0.077
75-35-4	1,1-Dichloroethene	96.94	ND		0.32	0.056
100-41-4	Ethylbenzene	106.17	ND		0.35	0.12
75-09-2	Methylene Chloride	84.93	ND		0.69	0.45
1634-04-4	Methyl tert-butyl ether	88.15	ND		1.4	0.25
91-20-3	Naphthalene	128.17	ND		0.21	0.21
127-18-4	Tetrachloroethene	165.83	ND		0.54	0.11
108-88-3	Toluene	92.14	ND		0.45	0.45
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.32	0.079
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.59	0.29
71-55-6	1,1,1-Trichloroethane	133.41	0.0743	J	0.44	0.065
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.44	0.11
79-01-6	Trichloroethene	131.39	ND		0.21	0.075
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.39	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.39	0.12
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.39	0.13
75-01-4	Vinyl chloride	62.50	ND		0.10	0.074
1330-20-7	Xylenes, Total	106.17	ND		0.69	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		60-140

FORM IV  
AIR - GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: R500MLD07.D Lab Sample ID: MB 140-4612/8  
 Matrix: Air Heated Purge: (Y/N) N  
 Instrument ID: MR Date Analyzed: 04/07/2016 12:36  
 GC Column: RTX-5 ID: 0.32 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-4612/1006	RCCVD07-LCS .d	04/07/2016 10:48
SV-169-A	140-4707-1	RD07P112.D	04/08/2016 02:48
SV-173-A	140-4707-4	RD07P113.D	04/08/2016 03:40

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4612/8  
 Matrix: Air Lab File ID: R500MLD07.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/07/2016 12:36  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.080	0.023
56-23-5	Carbon tetrachloride	153.81	ND		0.080	0.015
75-45-6	Chlorodifluoromethane	86.47	ND		0.080	0.015
67-66-3	Chloroform	119.38	ND		0.080	0.015
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.080	0.024
75-71-8	Dichlorodifluoromethane	120.91	ND		0.080	0.027
75-34-3	1,1-Dichloroethane	98.96	ND		0.080	0.010
107-06-2	1,2-Dichloroethane	98.96	ND		0.080	0.019
75-35-4	1,1-Dichloroethene	96.94	ND		0.080	0.014
100-41-4	Ethylbenzene	106.17	ND		0.080	0.027
75-09-2	Methylene Chloride	84.93	ND		0.20	0.13
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.40	0.068
91-20-3	Naphthalene	128.17	ND		0.040	0.040
127-18-4	Tetrachloroethene	165.83	ND		0.080	0.016
108-88-3	Toluene	92.14	ND		0.12	0.12
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.080	0.020
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.080	0.039
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.080	0.012
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.080	0.021
79-01-6	Trichloroethene	131.39	ND		0.040	0.014
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.080	0.034
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.080	0.025
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.080	0.026
75-01-4	Vinyl chloride	62.50	ND		0.040	0.029
1330-20-7	Xylenes, Total	106.17	ND		0.16	0.024

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4612/8  
 Matrix: Air Lab File ID: R500MLD07.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/07/2016 12:36  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4612 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.26	0.073
56-23-5	Carbon tetrachloride	153.81	ND		0.50	0.094
75-45-6	Chlorodifluoromethane	86.47	ND		0.28	0.053
67-66-3	Chloroform	119.38	ND		0.39	0.073
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.32	0.095
75-71-8	Dichlorodifluoromethane	120.91	ND		0.40	0.13
75-34-3	1,1-Dichloroethane	98.96	ND		0.32	0.040
107-06-2	1,2-Dichloroethane	98.96	ND		0.32	0.077
75-35-4	1,1-Dichloroethene	96.94	ND		0.32	0.056
100-41-4	Ethylbenzene	106.17	ND		0.35	0.12
75-09-2	Methylene Chloride	84.93	ND		0.69	0.45
1634-04-4	Methyl tert-butyl ether	88.15	ND		1.4	0.25
91-20-3	Naphthalene	128.17	ND		0.21	0.21
127-18-4	Tetrachloroethene	165.83	ND		0.54	0.11
108-88-3	Toluene	92.14	ND		0.45	0.45
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.32	0.079
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.59	0.29
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.44	0.065
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.44	0.11
79-01-6	Trichloroethene	131.39	ND		0.21	0.075
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.39	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.39	0.12
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.39	0.13
75-01-4	Vinyl chloride	62.50	ND		0.10	0.074
1330-20-7	Xylenes, Total	106.17	ND		0.69	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		60-140



FORM IV  
AIR - GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: R500MLD08.D Lab Sample ID: MB 140-4613/4  
 Matrix: Air Heated Purge: (Y/N) N  
 Instrument ID: MR Date Analyzed: 04/08/2016 12:40  
 GC Column: RTX-5 ID: 0.32 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-4613/1002	RCCVD08-LCS .d	04/08/2016 10:46
SV-172-A	140-4707-3	RD08P108.D	04/08/2016 22:40
SV-177-A	140-4707-9	RD08P109.D	04/08/2016 23:33

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4613/4  
 Matrix: Air Lab File ID: R500MLD08.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/08/2016 12:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.080	0.023
56-23-5	Carbon tetrachloride	153.81	ND		0.080	0.015
75-45-6	Chlorodifluoromethane	86.47	ND		0.080	0.015
67-66-3	Chloroform	119.38	ND		0.080	0.015
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.080	0.024
75-71-8	Dichlorodifluoromethane	120.91	ND		0.080	0.027
75-34-3	1,1-Dichloroethane	98.96	ND		0.080	0.010
107-06-2	1,2-Dichloroethane	98.96	ND		0.080	0.019
75-35-4	1,1-Dichloroethene	96.94	ND		0.080	0.014
100-41-4	Ethylbenzene	106.17	ND		0.080	0.027
75-09-2	Methylene Chloride	84.93	ND		0.20	0.13
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.40	0.068
91-20-3	Naphthalene	128.17	ND		0.040	0.040
127-18-4	Tetrachloroethene	165.83	ND		0.080	0.016
108-88-3	Toluene	92.14	ND		0.12	0.12
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.080	0.020
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.080	0.039
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.080	0.012
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.080	0.021
79-01-6	Trichloroethene	131.39	ND		0.040	0.014
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.080	0.034
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.080	0.025
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.080	0.026
75-01-4	Vinyl chloride	62.50	ND		0.040	0.029
1330-20-7	Xylenes, Total	106.17	ND		0.16	0.024

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		60-140

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 140-4613/4  
 Matrix: Air Lab File ID: R500MLD08.D  
 Analysis Method: TO 15 LL Date Collected: \_\_\_\_\_  
 Sample wt/vol: 500(mL) Date Analyzed: 04/08/2016 12:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4613 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		0.26	0.073
56-23-5	Carbon tetrachloride	153.81	ND		0.50	0.094
75-45-6	Chlorodifluoromethane	86.47	ND		0.28	0.053
67-66-3	Chloroform	119.38	ND		0.39	0.073
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.32	0.095
75-71-8	Dichlorodifluoromethane	120.91	ND		0.40	0.13
75-34-3	1,1-Dichloroethane	98.96	ND		0.32	0.040
107-06-2	1,2-Dichloroethane	98.96	ND		0.32	0.077
75-35-4	1,1-Dichloroethene	96.94	ND		0.32	0.056
100-41-4	Ethylbenzene	106.17	ND		0.35	0.12
75-09-2	Methylene Chloride	84.93	ND		0.69	0.45
1634-04-4	Methyl tert-butyl ether	88.15	ND		1.4	0.25
91-20-3	Naphthalene	128.17	ND		0.21	0.21
127-18-4	Tetrachloroethene	165.83	ND		0.54	0.11
108-88-3	Toluene	92.14	ND		0.45	0.45
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.32	0.079
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.59	0.29
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.44	0.065
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.44	0.11
79-01-6	Trichloroethene	131.39	ND		0.21	0.075
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		0.39	0.17
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		0.39	0.12
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.39	0.13
75-01-4	Vinyl chloride	62.50	ND		0.10	0.074
1330-20-7	Xylenes, Total	106.17	ND		0.69	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		60-140

FORM II  
AIR - GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Knoxville

Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Matrix: Air

Level: Low

GC Column (1): RTX-5 ID: 0.32 (mm)

Client Sample ID	Lab Sample ID	BFB #
SV-169-A	140-4707-1	105
SV-170-A	140-4707-2	105
SV-172-A	140-4707-3	103
SV-173-A	140-4707-4	97
SV-171-A	140-4707-5	101
SV-174-A	140-4707-6	105
SV-175-A	140-4707-7	101
SV-175-A DL	140-4707-7 DL	100
SV-176-A	140-4707-8	106
SV-177-A	140-4707-9	97
SV-168-A	140-4707-10	97
SV-DUP-A	140-4707-11	101
	MB 140-4612/8	95
	MB 140-4613/4	95
	MB 140-4620/7	107
	LCS 140-4612/1006	102
	LCS 140-4613/1002	103
	LCS 140-4620/1002	110

BFB = 4-Bromofluorobenzene (Surr)

QC LIMITS  
60-140

# Column to be used to flag recovery values

FORM II TO 15 LL

FORM III  
AIR - GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Air Level: Low Lab File ID: RCCVD07-LCS.d  
 Lab ID: LCS 140-4612/1006 Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ppb v/v)	LCS CONCENTRATION (ppb v/v)	LCS % REC	QC LIMITS REC	#
Benzene	1.99	2.04	103	70-130	
Carbon tetrachloride	1.99	2.29	115	70-130	
Chlorodifluoromethane	1.99	2.16	108	60-140	
Chloroform	1.99	2.06	103	70-130	
cis-1,2-Dichloroethene	1.99	1.97	99	70-130	
Dichlorodifluoromethane	1.99	1.77	89	60-140	
1,1-Dichloroethane	1.99	2.13	107	70-130	
1,2-Dichloroethane	1.99	2.19	110	70-130	
1,1-Dichloroethene	1.99	1.92	96	70-130	
Ethylbenzene	1.99	2.05	103	70-130	
Methylene Chloride	1.99	1.91	96	70-130	
Methyl tert-butyl ether	1.99	2.05	103	60-140	
Naphthalene	1.99	1.61	81	60-140	
Tetrachloroethene	1.99	2.02	101	70-130	
Toluene	1.99	2.14	108	70-130	
trans-1,2-Dichloroethene	1.99	1.92	97	70-130	
1,2,4-Trichlorobenzene	1.99	1.61	81	60-140	
1,1,1-Trichloroethane	1.99	2.07	104	70-130	
1,1,2-Trichloroethane	1.99	2.08	104	70-130	
Trichloroethene	1.99	2.01	101	70-130	
1,2,3-Trimethylbenzene	1.99	2.19	110	70-130	
1,2,4-Trimethylbenzene	1.99	2.06	103	70-130	
1,3,5-Trimethylbenzene	1.99	2.01	101	70-130	
Vinyl chloride	1.99	2.22	112	70-130	
Xylenes, Total	5.97	6.27	105	70-130	

# Column to be used to flag recovery and RPD values  
 FORM III TO 15 LL

FORM III  
AIR - GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Air Level: Low Lab File ID: RCCVD08-LCS.d  
 Lab ID: LCS 140-4613/1002 Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ppb v/v)	LCS CONCENTRATION (ppb v/v)	LCS % REC	QC LIMITS REC	#
Benzene	2.00	2.06	103	70-130	
Carbon tetrachloride	2.00	2.32	116	70-130	
Chlorodifluoromethane	2.00	2.19	110	60-140	
Chloroform	2.00	2.08	104	70-130	
cis-1,2-Dichloroethene	2.00	2.01	100	70-130	
Dichlorodifluoromethane	2.00	1.79	89	60-140	
1,1-Dichloroethane	2.00	2.13	107	70-130	
1,2-Dichloroethane	2.00	2.21	111	70-130	
1,1-Dichloroethene	2.00	1.94	97	70-130	
Ethylbenzene	2.00	2.06	103	70-130	
Methylene Chloride	2.00	1.94	97	70-130	
Methyl tert-butyl ether	2.00	2.08	104	60-140	
Naphthalene	2.00	1.74	87	60-140	
Tetrachloroethene	2.00	2.04	102	70-130	
Toluene	2.00	2.17	108	70-130	
trans-1,2-Dichloroethene	2.00	1.93	97	70-130	
1,2,4-Trichlorobenzene	2.00	1.72	86	60-140	
1,1,1-Trichloroethane	2.00	2.10	105	70-130	
1,1,2-Trichloroethane	2.00	2.11	105	70-130	
Trichloroethene	2.00	2.07	103	70-130	
1,2,3-Trimethylbenzene	2.00	2.19	110	70-130	
1,2,4-Trimethylbenzene	2.00	2.08	104	70-130	
1,3,5-Trimethylbenzene	2.00	2.01	101	70-130	
Vinyl chloride	2.00	2.22	111	70-130	
Xylenes, Total	6.00	6.35	106	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
AIR - GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Air Level: Low Lab File ID: GCCVD05C-LCS.d  
 Lab ID: LCS 140-4620/1002 Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ppb v/v)	LCS CONCENTRATION (ppb v/v)	LCS % REC	QC LIMITS REC	#
Benzene	1.99	1.91	96	70-130	
Carbon tetrachloride	1.99	1.97	99	70-130	
Chlorodifluoromethane	1.99	2.37	119	60-140	
Chloroform	1.99	2.17	109	70-130	
cis-1,2-Dichloroethene	1.99	1.90	95	70-130	
Dichlorodifluoromethane	1.99	2.19	110	60-140	
1,1-Dichloroethane	1.99	2.21	111	70-130	
1,2-Dichloroethane	1.99	2.13	107	70-130	
1,1-Dichloroethene	1.99	1.75	88	70-130	
Ethylbenzene	1.99	1.95	98	70-130	
Methylene Chloride	1.99	1.72	87	70-130	
Methyl tert-butyl ether	1.99	2.06	103	60-140	
Naphthalene	1.99	1.94	98	60-140	
Tetrachloroethene	1.99	1.79	90	70-130	
Toluene	1.99	1.98	99	70-130	
trans-1,2-Dichloroethene	1.99	1.78	90	70-130	
1,2,4-Trichlorobenzene	1.99	1.37	69	60-140	
1,1,1-Trichloroethane	1.99	2.19	110	70-130	
1,1,2-Trichloroethane	1.99	1.91	96	70-130	
Trichloroethene	1.99	1.52	76	70-130	
1,2,3-Trimethylbenzene	1.99	1.92	96	70-130	
1,2,4-Trimethylbenzene	1.99	1.81	91	70-130	
1,3,5-Trimethylbenzene	1.99	1.64	82	70-130	
Vinyl chloride	1.99	2.13	107	70-130	
Xylenes, Total	5.97	5.92	99	70-130	

# Column to be used to flag recovery and RPD values

FORM VIII  
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: ICIS 140-4097/7 Date Analyzed: 01/07/2016 22:35  
 Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm)  
 Lab File ID (Standard): GA07ICL6.D Heated Purge: (Y/N) N  
 Calibration ID: 457

	CBM		DFB		CBZ	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	322829	8.64	1493910	10.82	1450262	15.57
UPPER LIMIT	451961	8.97	2091474	11.15	2030367	15.90
LOWER LIMIT	193697	8.31	896346	10.49	870157	15.24
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICV 140-4097/12	352705	8.63	1664982	10.81	1587818	15.56

CBM = Chlorobromomethane (IS)  
 DFB = 1,4-Difluorobenzene  
 CBZ = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area  
 RT Limit = ± 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits



FORM VIII  
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCVIS 140-4620/2 Date Analyzed: 04/06/2016 12:02  
 Instrument ID: MG GC Column: RTX-5 ID: 0.32 (mm)  
 Lab File ID (Standard): GCCVD05C.D Heated Purge: (Y/N) N  
 Calibration ID: 457

	CBM		DFB		CBZ		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12/24 HOUR STD	582303	8.62	3005155	10.78	2818077	15.54	
UPPER LIMIT	815224	8.95	4207217	11.11	3945308	15.87	
LOWER LIMIT	349382	8.29	1803093	10.45	1690846	15.21	
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 140-4620/1002	582303	8.62	3005155	10.78	2818077	15.54	
MB 140-4620/7	589622	8.61	2927576	10.78	2618611	15.53	
140-4707-2	SV-170-A	666443	8.61	3482257	10.78	3086236	15.53
140-4707-5	SV-171-A	610440	8.61	2899899	10.78	2557543	15.54
140-4707-6	SV-174-A	688545	8.61	3635487	10.78	3278471	15.53
140-4707-7	SV-175-A	603082	8.61	3112614	10.78	2618925	15.54
140-4707-8	SV-176-A	647060	8.61	3156806	10.78	2674454	15.53
140-4707-10	SV-168-A	737779	8.63	3783374	10.80	3141552	15.54
140-4707-11	SV-DUP-A	594840	8.62	2743043	10.79	2144976	15.54
140-4707-7 DL	SV-175-A DL	645242	8.62	3313631	10.80	2845132	15.54

CBM = Chlorobromomethane (IS)  
 DFB = 1,4-Difluorobenzene  
 CBZ = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area  
 RT Limit = ± 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: ICIS 140-3621/7 Date Analyzed: 10/29/2015 18:33  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm)  
 Lab File ID (Standard): RJ29ICIS06.D Heated Purge: (Y/N) N  
 Calibration ID: 393

	CBM		DFB		CBZ	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	382463	8.43	1942786	10.62	1806380	16.84
UPPER LIMIT	535448	8.76	2719900	10.95	2528932	17.17
LOWER LIMIT	229478	8.10	1165672	10.29	1083828	16.51
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICV 140-3621/12	485034	8.44	2411549	10.63	2232798	16.84

CBM = Chlorobromomethane (IS)  
 DFB = 1,4-Difluorobenzene  
 CBZ = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area  
 RT Limit = ± 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCVIS 140-4612/6 Date Analyzed: 04/07/2016 10:48  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm)  
 Lab File ID (Standard): RCCVD07.D Heated Purge: (Y/N) N  
 Calibration ID: 393

	CBM		DFB		CBZ		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12/24 HOUR STD	263672	8.43	1341763	10.60	1210696	16.82	
UPPER LIMIT	369141	8.76	1878468	10.93	1694974	17.15	
LOWER LIMIT	158203	8.10	805058	10.27	726418	16.49	
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 140-4612/1006	263672	8.43	1341763	10.60	1210696	16.82	
MB 140-4612/8	295122	8.42	1489214	10.60	1292113	16.82	
140-4707-1	SV-169-A	197399	8.42	1012948	10.60	947412	16.82
140-4707-4	SV-173-A	301060	8.42	1515453	10.60	1384919	16.81

CBM = Chlorobromomethane (IS)  
 DFB = 1,4-Difluorobenzene  
 CBZ = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area  
 RT Limit = ± 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCVIS 140-4613/2 Date Analyzed: 04/08/2016 10:46  
 Instrument ID: MR GC Column: RTX-5 ID: 0.32 (mm)  
 Lab File ID (Standard): RCCVD08.D Heated Purge: (Y/N) N  
 Calibration ID: 393

	CBM		DFB		CBZ		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12/24 HOUR STD	278226	8.42	1424449	10.60	1279349	16.82	
UPPER LIMIT	389516	8.75	1994229	10.93	1791089	17.15	
LOWER LIMIT	166936	8.09	854669	10.27	767609	16.49	
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 140-4613/1002	278226	8.42	1424449	10.60	1279349	16.82	
MB 140-4613/4	298151	8.42	1497293	10.60	1296299	16.81	
140-4707-3	SV-172-A	219155	8.41	1125811	10.60	1026206	16.81
140-4707-9	SV-177-A	320829	8.41	1624780	10.60	1498791	16.81

CBM = Chlorobromomethane (IS)  
 DFB = 1,4-Difluorobenzene  
 CBZ = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area  
 RT Limit = ± 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Instrument ID: MG Start Date: 01/07/2016 17:50

Analysis Batch Number: 4097 End Date: 01/08/2016 02:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 140-4097/1		01/07/2016 17:50	1	GA07BFB.D	RTX-5 0.32 (mm)
IC 140-4097/2		01/07/2016 19:02	1	GA07ICL1.D	RTX-5 0.32 (mm)
IC 140-4097/3		01/07/2016 19:45	1	GA07ICL2.D	RTX-5 0.32 (mm)
IC 140-4097/4		01/07/2016 20:28	1	GA07ICL3.D	RTX-5 0.32 (mm)
IC 140-4097/5		01/07/2016 21:11	1	GA07ICL4.D	RTX-5 0.32 (mm)
IC 140-4097/6		01/07/2016 21:53	1	GA07ICL5.D	RTX-5 0.32 (mm)
ICIS 140-4097/7		01/07/2016 22:35	1	GA07ICL6.D	RTX-5 0.32 (mm)
IC 140-4097/8		01/07/2016 23:17	1	GA07ICL7.D	RTX-5 0.32 (mm)
IC 140-4097/9		01/08/2016 00:01	1	GA07ICL8.D	RTX-5 0.32 (mm)
IC 140-4097/10		01/08/2016 00:44	1	GA07ICL9.D	RTX-5 0.32 (mm)
ICV 140-4097/12		01/08/2016 02:07	1	GA07ICV.D	RTX-5 0.32 (mm)

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Instrument ID: MG Start Date: 04/06/2016 11:30

Analysis Batch Number: 4620 End Date: 04/07/2016 10:22

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 140-4620/1		04/06/2016 11:30	1	GBFBD05C.D	RTX-5 0.32 (mm)
CCVIS 140-4620/2		04/06/2016 12:02	1	GCCVD05C.D	RTX-5 0.32 (mm)
LCS 140-4620/1002		04/06/2016 12:02	1	GCCVD05C-LCS.d	RTX-5 0.32 (mm)
MB 140-4620/7		04/06/2016 16:42	1	500BLKD06.D	RTX-5 0.32 (mm)
140-4707-2		04/06/2016 18:07	1	GD06P105.D	RTX-5 0.32 (mm)
140-4707-5		04/06/2016 20:13	3.47	GD06P108.D	RTX-5 0.32 (mm)
140-4707-6		04/06/2016 20:55	1	GD06P109.D	RTX-5 0.32 (mm)
140-4707-7		04/06/2016 21:37	125.78	GD06P110.D	RTX-5 0.32 (mm)
140-4707-8		04/06/2016 22:19	1	GD06P111.D	RTX-5 0.32 (mm)
ZZZZZ		04/06/2016 23:01	1		RTX-5 0.32 (mm)
140-4707-10		04/07/2016 00:27	30.37	GD06P113.D	RTX-5 0.32 (mm)
140-4707-11		04/07/2016 01:09	1	GD06P114.D	RTX-5 0.32 (mm)
140-4707-7 DL		04/07/2016 10:22	125.78	GD06P110DL.D	RTX-5 0.32 (mm)

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Instrument ID: MR Start Date: 10/29/2015 12:53

Analysis Batch Number: 3621 End Date: 10/29/2015 22:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 140-3621/1		10/29/2015 12:53	1	RBFBJ29.D	RTX-5 0.32 (mm)
IC 140-3621/2		10/29/2015 14:14	1	RJ29IC01.D	RTX-5 0.32 (mm)
IC 140-3621/3		10/29/2015 15:07	1	RJ29IC02.D	RTX-5 0.32 (mm)
IC 140-3621/4		10/29/2015 15:58	1	RJ29IC03.D	RTX-5 0.32 (mm)
IC 140-3621/5		10/29/2015 16:50	1	RJ29IC04.D	RTX-5 0.32 (mm)
IC 140-3621/6		10/29/2015 17:41	1	RJ29IC05.D	RTX-5 0.32 (mm)
ICIS 140-3621/7		10/29/2015 18:33	1	RJ29ICIS06.D	RTX-5 0.32 (mm)
IC 140-3621/8		10/29/2015 19:26	1	RJ29IC07.D	RTX-5 0.32 (mm)
IC 140-3621/9		10/29/2015 20:18	1	RJ29IC08.D	RTX-5 0.32 (mm)
IC 140-3621/10		10/29/2015 21:11	1	RJ29IC09.D	RTX-5 0.32 (mm)
ICV 140-3621/12		10/29/2015 22:54	1	RJ29ICV.D	RTX-5 0.32 (mm)

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Instrument ID: MR Start Date: 04/07/2016 10:16

Analysis Batch Number: 4612 End Date: 04/08/2016 08:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 140-4612/5		04/07/2016 10:16	1	RBFBD07.D	RTX-5 0.32 (mm)
CCVIS 140-4612/6		04/07/2016 10:48	1	RCCVD07.D	RTX-5 0.32 (mm)
LCS 140-4612/1006		04/07/2016 10:48	1	RCCVD07-LCS.d	RTX-5 0.32 (mm)
MB 140-4612/8		04/07/2016 12:36	1	R500MLD07.D	RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 13:28	1		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 18:27	11.59		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 19:27	3.63		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 20:21	1.55		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 21:15	1		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 22:08	1		RTX-5 0.32 (mm)
ZZZZZ		04/07/2016 23:02	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 00:00	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 00:58	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 01:56	1		RTX-5 0.32 (mm)
140-4707-1		04/08/2016 02:48	3.57	RD07P112.D	RTX-5 0.32 (mm)
140-4707-4		04/08/2016 03:40	13.56	RD07P113.D	RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 06:18	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 07:14	2.04		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 08:10	1.74		RTX-5 0.32 (mm)



AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1

SDG No.: \_\_\_\_\_

Instrument ID: MR Start Date: 04/08/2016 10:14

Analysis Batch Number: 4613 End Date: 04/09/2016 04:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 140-4613/1		04/08/2016 10:14	1	RBFBD08.D	RTX-5 0.32 (mm)
CCVIS 140-4613/2		04/08/2016 10:46	1	RCCVD08.D	RTX-5 0.32 (mm)
LCS 140-4613/1002		04/08/2016 10:46	1	RCCVD08-LCS.d	RTX-5 0.32 (mm)
MB 140-4613/4		04/08/2016 12:40	1	R500MLD08.D	RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 13:33	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 15:31	3836.7 3		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 16:24	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 18:11	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 19:05	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 19:59	1		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 20:54	1.42		RTX-5 0.32 (mm)
ZZZZZ		04/08/2016 21:48	1.41		RTX-5 0.32 (mm)
140-4707-3		04/08/2016 22:40	1	RD08P108.D	RTX-5 0.32 (mm)
140-4707-9		04/08/2016 23:33	1	RD08P109.D	RTX-5 0.32 (mm)
ZZZZZ		04/09/2016 00:54	1		RTX-5 0.32 (mm)
ZZZZZ		04/09/2016 01:46	1.75		RTX-5 0.32 (mm)
ZZZZZ		04/09/2016 02:45	1		RTX-5 0.32 (mm)
ZZZZZ		04/09/2016 03:37	1		RTX-5 0.32 (mm)
ZZZZZ		04/09/2016 04:31	74.69		RTX-5 0.32 (mm)

## Summa Canister Dilution Worksheet

Client: Tetra Tech, Inc.

Job No.: 140-4707-1

Lab Sample ID	Canister Volume (L)	Preadjusted Pressure ("Hg)	Preadjusted Pressure (atm)	Preadjusted Volume (L)	Adjusted Pressure (psig)	Adjusted Pressure (atm)	Adjusted Volume (L)	Initial Volume (mL)	Dilution Factor	Final Dilution Factor	Date	Time	Analyst
140-4707-1	1	-4.1	0.86	0.86	30.6	3.08	3.08		3.57	3.57	04/06/16	13:04	Barlozhetskaya, Anna F
140-4707-4	1	-4.0	0.87	0.87	30.8	3.10	3.10		3.57	3.57	04/06/16	13:04	Barlozhetskaya, Anna F
140-4707-4	1	0.0	1.00	1.00	41.1	3.80	3.80		3.80	13.56	04/07/16	12:36	Barlozhetskaya, Anna F
140-4707-5	1	-3.3	0.89	0.89	30.7	3.09	3.09		3.47	3.47	04/06/16	13:04	Barlozhetskaya, Anna F
140-4707-7	1	-3.5	0.88	0.88	32.4	3.20	3.20		3.63	3.63	04/06/16	13:51	Barlozhetskaya, Anna F
140-4707-7	1	0	1.00	1.00	32.7	3.22	3.22		3.22	11.70	04/06/16	13:53	Barlozhetskaya, Anna F
140-4707-7	1	0	1.00	1.00	33.0	3.24	3.24		3.24	37.97	04/06/16	13:54	Barlozhetskaya, Anna F
140-4707-7	1	0	1.00	1.00	34.0	3.31	3.31		3.31	125.78	04/06/16	13:55	Barlozhetskaya, Anna F
140-4707-10	1	-2.9	0.90	0.90	30.8	3.10	3.10		3.43	3.43	04/06/16	15:16	Barlozhetskaya, Anna F
140-4707-10	1	0.0	1.00	1.00	21.7	2.48	2.48		2.48	8.49	04/06/16	15:17	Barlozhetskaya, Anna F
140-4707-10	1	0.0	1.00	1.00	37.9	3.58	3.58		3.58	30.37	04/06/16	15:18	Barlozhetskaya, Anna F

**Formulae:**

Preadjusted Volume (L) = ( Preadjusted Pressure ("Hg) + 29.92 "Hg \* Vol L ) / 29.92 "Hg  
 Adjusted Volume (L) = ( Adjusted Pressure (psig) + 14.7 psig \* Vol L ) / 14.7 psig  
 Dilution Factor = Adjusted Volume (L) / Preadjusted Volume (L)

**Where:**

29.92 "Hg = Standard atmospheric pressure in inches of Mercury ("Hg)  
 14.7 psig = Standard atmospheric pressure in pounds per square inch gauge (psig)

Sample Calc

LMC - MRC  
SDG 140-3557-1

SAMPLE CALCULATION  
SAMPLE IDENTIFICATION

SV-168-A

COMPOUND

Trichloroethene

MW=

131.4

GAS CONSTANT =

24.45

COMPOUND AREA

2293557

INTERNAL STANDARD AMOUNT (ppbv)

4

DILUTION FACTOR

30.37

INTERNAL STANDARD AREA

3783374

AVERAGE RRF

0.3928

SAMPLE VOLUME (mL)

12

FINAL VOLUME (mL)

500

on column

6.1733 ppbv

33.18  $\mu\text{g}/\text{m}^3$

final result

7812 ppbv

41983  $\mu\text{g}/\text{m}^3$

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-4707-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: SV-168-A Lab Sample ID: 140-4707-10  
 Matrix: Air Lab File ID: GD06P113.D  
 Analysis Method: TO 15 LL Date Collected: 04/01/2016 13:43  
 Sample wt/vol: 12 (mL) Date Analyzed: 04/07/2016 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 30.37  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-5 ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 4620 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	MDL
71-43-2	Benzene	78.11	ND		320	93
56-23-5	Carbon tetrachloride	153.81	ND		640	120
75-45-6	Chlorodifluoromethane	86.47	ND		360	67
67-66-3	Chloroform	119.38	290	J	490	93
156-59-2	cis-1,2-Dichloroethene	96.94	520		400	120
75-71-8	Dichlorodifluoromethane	120.91	ND		500	170
75-34-3	1,1-Dichloroethane	98.96	180	J	410	51
107-06-2	1,2-Dichloroethane	98.96	ND		410	97
75-35-4	1,1-Dichloroethene	96.94	16000		400	70
100-41-4	Ethylbenzene	106.17	ND		440	150
75-09-2	Methylene Chloride	84.93	ND		880	570
1634-04-4	Methyl tert-butyl ether	88.15	ND		1800	310
91-20-3	Naphthalene	128.17	ND		270	270
127-18-4	Tetrachloroethene	165.83	ND		690	140
108-88-3	Toluene	92.14	ND		570	570
156-60-5	trans-1,2-Dichloroethene	96.94	ND		400	100
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		750	370
71-55-6	1,1,1-Trichloroethane	133.41	180	J B	550	83
79-00-5	1,1,2-Trichloroethane	133.41	ND		550	140
79-01-6	Trichloroethene	131.39	42000		270	95
526-73-8	1,2,3-Trimethylbenzene	120.19	ND		500	210
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		500	160
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		500	160
75-01-4	Vinyl chloride	62.50	ND		130	94
1330-20-7	Xylenes, Total	106.17	ND		880	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		60-140

Sample Calc

TestAmerica Knoxville  
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P113.D  
 Lims ID: 140-4707-A-10 Lab Sample ID: 140-4707-10  
 Client ID: SV-168-A  
 Sample Type: Client  
 Inject. Date: 07-Apr-2016 00:27:30 ALS Bottle#: 13 Worklist Smp#: 18  
 Purge Vol: 500.000 mL Dil. Factor: 30.3700  
 Sample Info: 140-4707-a-10@30.37  
 Misc. Info.: G040616,TO15,140-0002724-018  
 Operator ID: 403648 Instrument ID: MG  
 Method: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\MG\_TO15.m  
 Limit Group: MSA TO14A\_15 Routine ICAL  
 Last Update: 07-Apr-2016 11:39:35 Calib Date: 08-Jan-2016 00:44:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Knoxville\ChromData\MG\20160107-2458.b\GA07ICL9.D  
 Column 1 : RTX-5 ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK003

First Level Reviewer: tajh Date: 07-Apr-2016 10:04:21

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	128	8.632	8.616	0.016	87	737779	4.00	
* 2 1,4-Difluorobenzene	114	10.800	10.784	0.016	95	3783374	4.00	
* 3 Chlorobenzene-d5 (IS)	117	15.540	15.535	0.005	87	3141552	4.00	
\$ 4 4-Bromofluorobenzene (Surr	95	17.190	17.185	0.005	87	2035753	3.86	
27 1,1-Dichloroethene	96	5.861	5.845	0.017	98	726715	3.17	
31 Methylene Chloride	84	6.195	6.168	0.027	93	16083	0.0733	
37 1,1-Dichloroethane	63	7.370	7.349	0.021	99	14026	0.0356	
42 cis-1,2-Dichloroethene	96	8.320	8.303	0.017	93	25062	0.1027	
44 Chloroform	83	8.654	8.632	0.022	90	22212	0.0463	
47 1,1,1-Trichloroethane	97	9.651	9.635	0.016	93	13722	0.0261	
59 Trichloroethene	130	11.506	11.496	0.010	98	2293557	6.17	

Reagents:

MAissur1\_00002 Amount Added: 40.00 Units: mL Run Reagent

FORM VI  
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica KnoxvilleJob No.: 140-4707-1Analy Batch No.: 4097

SDG No.: \_\_\_\_\_

Instrument ID: MGGC Column: RTX-5ID: 0.32 (mm)Heated Purge: (Y/N) NCalibration Start Date: 01/07/2016 19:02Calibration End Date: 01/08/2016 00:44Calibration ID: 457

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Trichloroethene	0.3934	0.3866	0.4304	0.4016	0.3450	Ave	0.3928				8.5		30.0				
	0.4190	0.4153	0.4118	0.3324													
Dibromomethane	++++	++++	0.3345	0.3158	0.2896	Ave	0.3094				6.1		30.0				
	0.3185	0.3164	0.3123	0.2790													
Bromodichloromethane	0.5167	0.5247	0.5617	0.5441	0.4985	Ave	0.5339				5.1		30.0				
	0.5573	0.5574	0.5553	0.4897													
1,4-Dioxane	++++	++++	0.1166	0.1150	0.1205	Ave	0.1132				6.3		30.0				
	0.1188	0.1148	0.1049	0.1015													
Methyl methacrylate	++++	++++	0.2405	0.2497	1.0481	Ave	0.3750				79.4	*	30.0				
	0.2868	0.2830	0.2357	0.2811													
Methylcyclohexane	++++	0.6816	0.7415	0.6787	0.6177	Ave	0.6456				10.2		30.0				
	0.6709	0.6386	0.6182	0.5177													
4-Methyl-2-pentanone (MIBK)	++++	++++	0.4220	0.4474	0.4938	Ave	0.4627				4.9		30.0				
	0.4678	0.4701	0.4741	0.4638													
cis-1,3-Dichloropropene	++++	0.3708	0.3762	0.3624	0.3295	Ave	0.3664				4.5		30.0				
	0.3671	0.3808	0.3815	0.3627													
trans-1,3-Dichloropropene	0.3302	0.3439	0.3508	0.3293	0.3000	Ave	0.3244				5.8		30.0				
	0.2940	0.3250	0.3323	0.3140													
Toluene Range	++++	++++	++++	1.9223	1.7675	Ave	1.8857				3.9		30.0				
	1.9409	1.9672	1.8654	1.8508													
Toluene	++++	0.9894	0.9134	0.8971	0.8677	Ave	0.8698				7.9		30.0				
	0.8418	0.8760	0.8150	0.7582													
1,1,2-Trichloroethane	0.2536	0.2722	0.2682	0.2610	0.2410	Ave	0.2487				7.0		30.0				
	0.2379	0.2502	0.2370	0.2168													
2-Methylthiophene	++++	0.7423	0.7236	0.7176	0.6647	Ave	0.6846				6.3		30.0				
	0.6568	0.6926	0.6707	0.6085													
3-Methylthiophene	0.6005	0.6875	0.6966	0.6815	0.6254	Ave	0.6465				6.1		30.0				
	0.6234	0.6641	0.6513	0.5878													
2-Hexanone	++++	0.2504	0.2051	0.2284	0.2506	Ave	0.2346				8.3		30.0				
	0.2161	0.2466	0.2587	0.2207													
C8 Range	++++	++++	++++	2.5646	2.8418	Ave	2.5792				9.1		30.0				
	2.7430	2.6743	2.4714	2.1802													
Octane	++++	0.3439	0.3401	0.3385	0.3428	Ave	0.3337				6.8		30.0				
	0.3426	0.3522	0.3295	0.2798													
Dibromochloromethane	++++	0.5037	0.5150	0.5207	0.5003	Ave	0.5198				4.6		30.0				
	0.4998	0.5493	0.5634	0.5059													
1,2-Dibromoethane (EDB)	0.3708	0.4323	0.4168	0.4043	0.3669	Ave	0.3913				6.5		30.0				
	0.3641	0.3956	0.4051	0.3656													
Tetrachloroethene	0.3407	0.3768	0.3765	0.3694	0.3274	Ave	0.3468				6.9		30.0				
	0.3272	0.3461	0.3494	0.3080													

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

**FIELD DUPLICATE PRECISION**

SAMPLE	PARAMETER	RESULT ( $\mu\text{g}/\text{m}^3$ )	DUPLICATE SAMPLE	PARAMETER	RESULT ( $\mu\text{g}/\text{m}^3$ )	RPD (%)	DIFFERENCE	RL ( $\mu\text{g}/\text{m}^3$ )
SV-174-A	1,1,1-Trichloroethane	30	SV-DUP-A	1,1,1-Trichloroethane	36	18.18	6	11
	1,1-Dichloroethane	8.3		1,1-Dichloroethane	9.4 J	12.43	1.1	8.1
	1,1-Dichloroethene	55		1,1-Dichloroethene	71	25.40	16	7.9
	Chlorodifluoromethane	1.5 J		Chlorodifluoromethane	2.4 U	46.15	0.9	7.1
	Chloroform	9.6		Chloroform	11 J	13.59	1.4	9.8
	cis-1,2-Dichloroethene	26		cis-1,2-Dichloroethene	31	17.54	5	7.9
	Trichloroethene	580		Trichloroethene	840	36.62	260	5.4

QC: RPD < 50%  
or DIFFERENCE > 2X RL

U - NON-DETECT  
J - ESTIMATED  
NA - NOT APPLICABLE

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P105.D

Injection Date: 06-Apr-2016 18:07:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-2

Lab Sample ID: 140-4707-2

Worklist Smp#: 9

Client ID: SV-170-A

Purge Vol: 500.000 mL

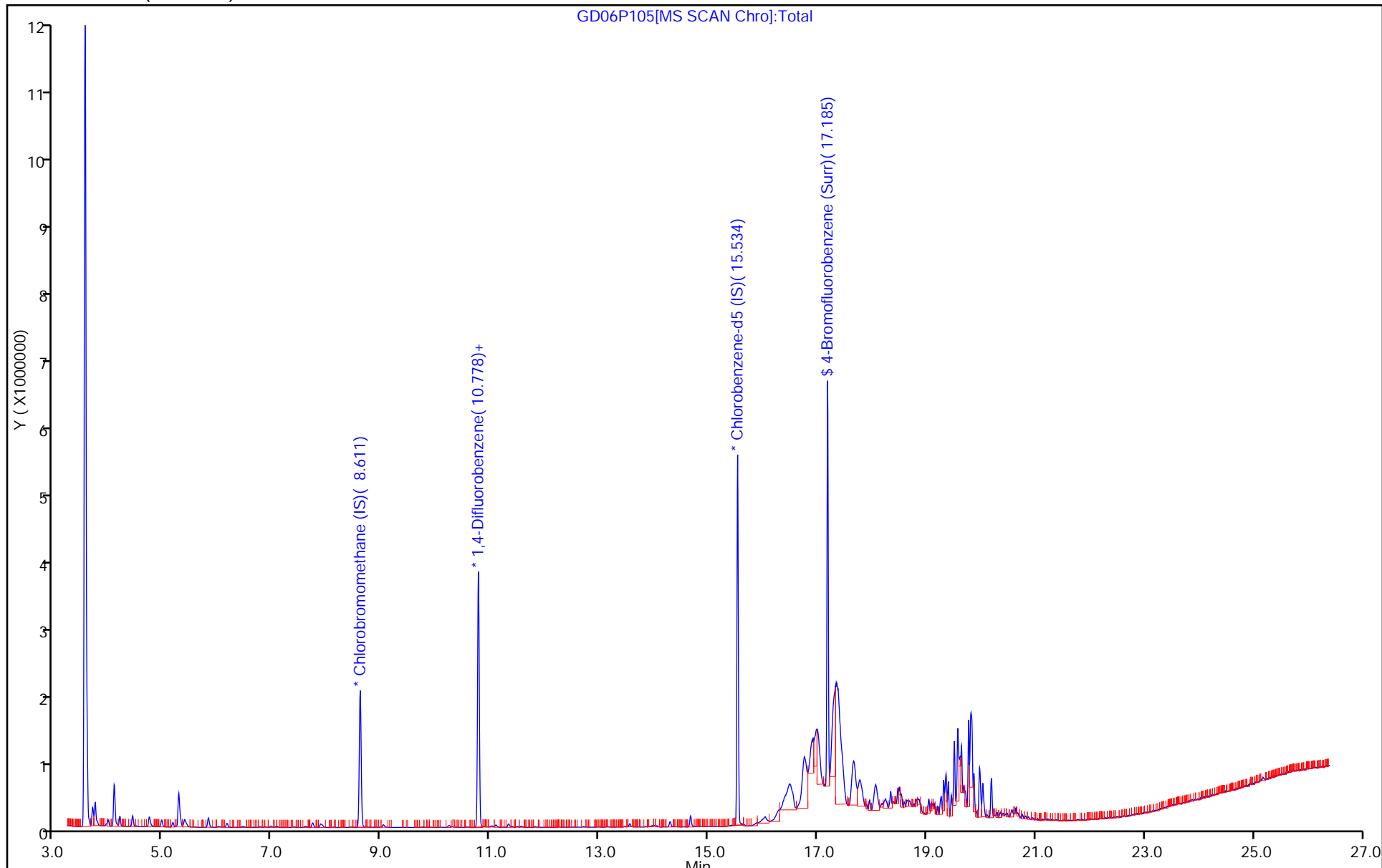
Dil. Factor: 1.0000

ALS Bottle#: 5

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)





TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P108.D

Injection Date: 06-Apr-2016 20:13:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-5

Lab Sample ID: 140-4707-5

Worklist Smp#: 12

Client ID: SV-171-A

Purge Vol: 500.000 mL

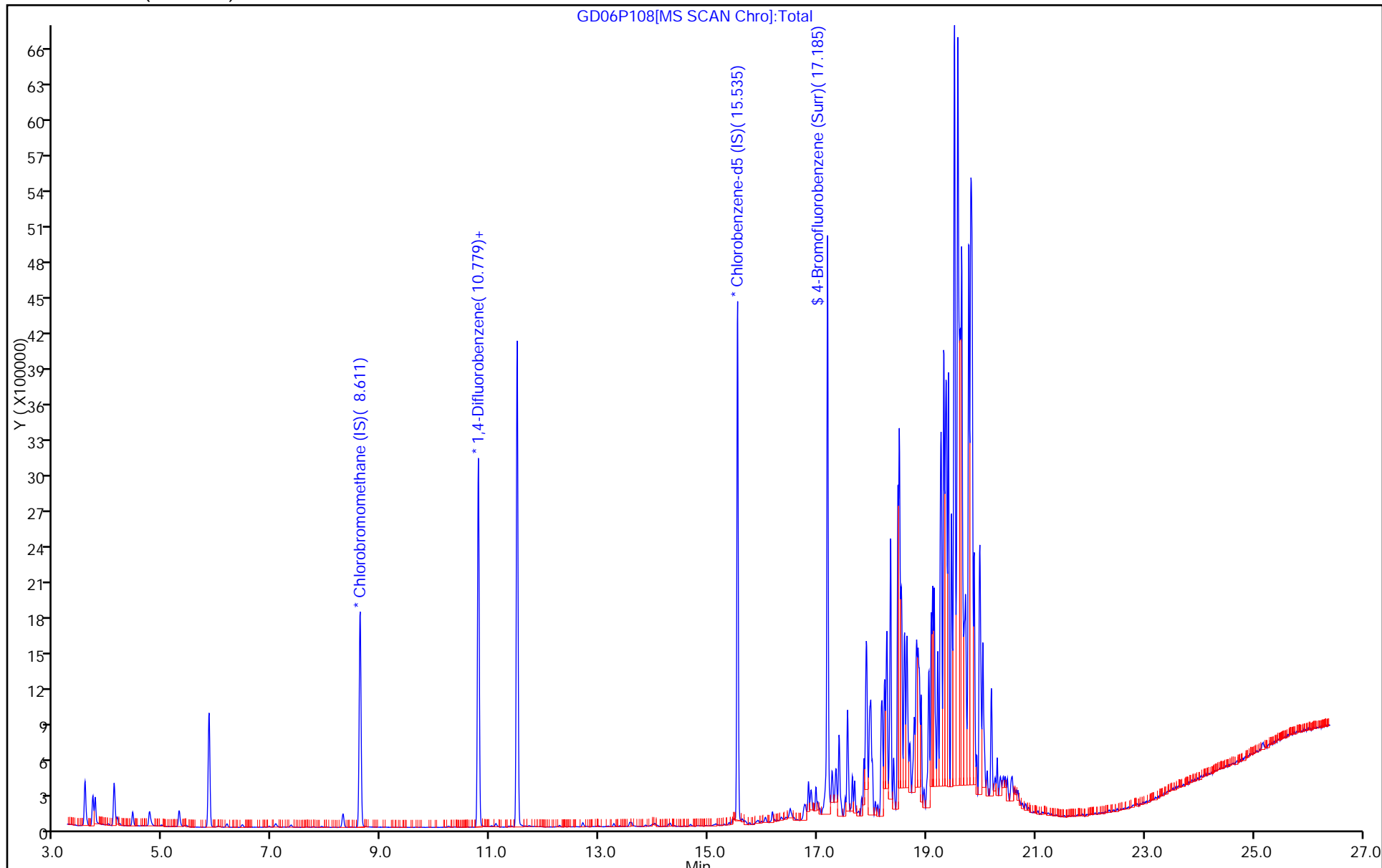
Dil. Factor: 3.4700

ALS Bottle#: 8

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P109.D

Injection Date: 06-Apr-2016 20:55:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-6

Lab Sample ID: 140-4707-6

Worklist Smp#: 13

Client ID: SV-174-A

Purge Vol: 500.000 mL

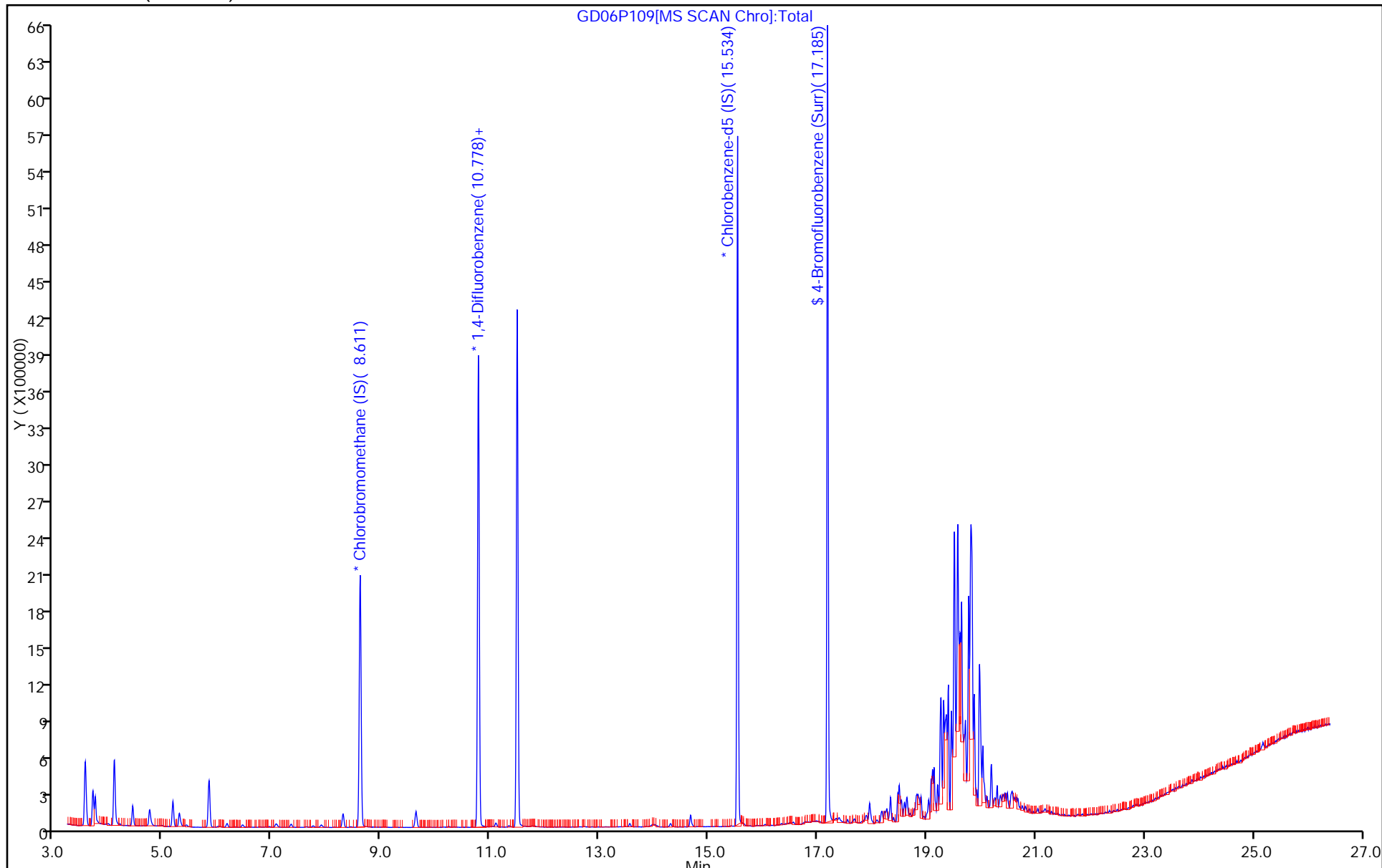
Dil. Factor: 1.0000

ALS Bottle#: 9

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P110.D

Injection Date: 06-Apr-2016 21:37:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-7

Lab Sample ID: 140-4707-7

Worklist Smp#: 14

Client ID: SV-175-A

Purge Vol: 500.000 mL

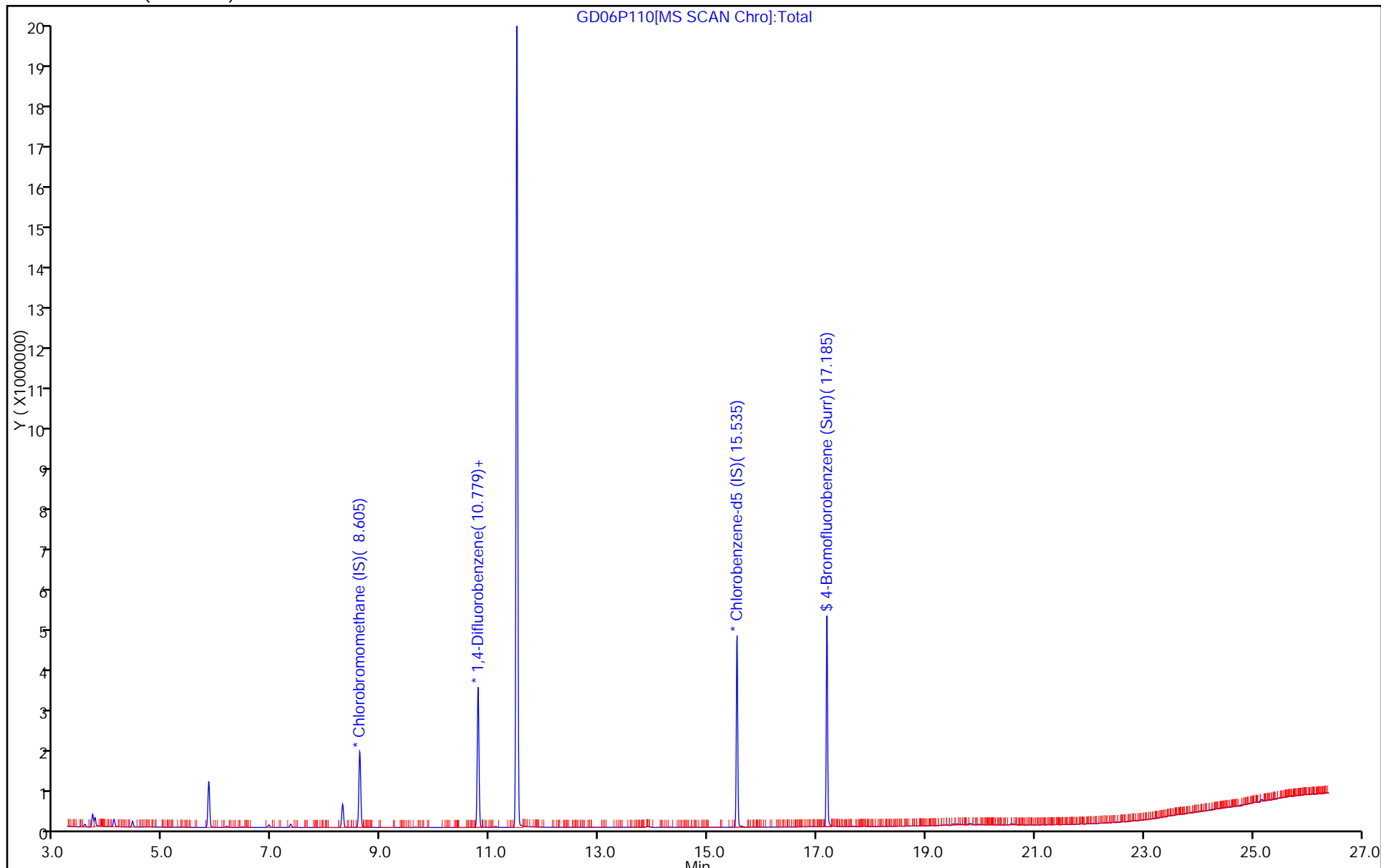
Dil. Factor: 125.7800

ALS Bottle#: 10

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P111.D

Injection Date: 06-Apr-2016 22:19:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-8

Lab Sample ID: 140-4707-8

Worklist Smp#: 15

Client ID: SV-176-A

Purge Vol: 500.000 mL

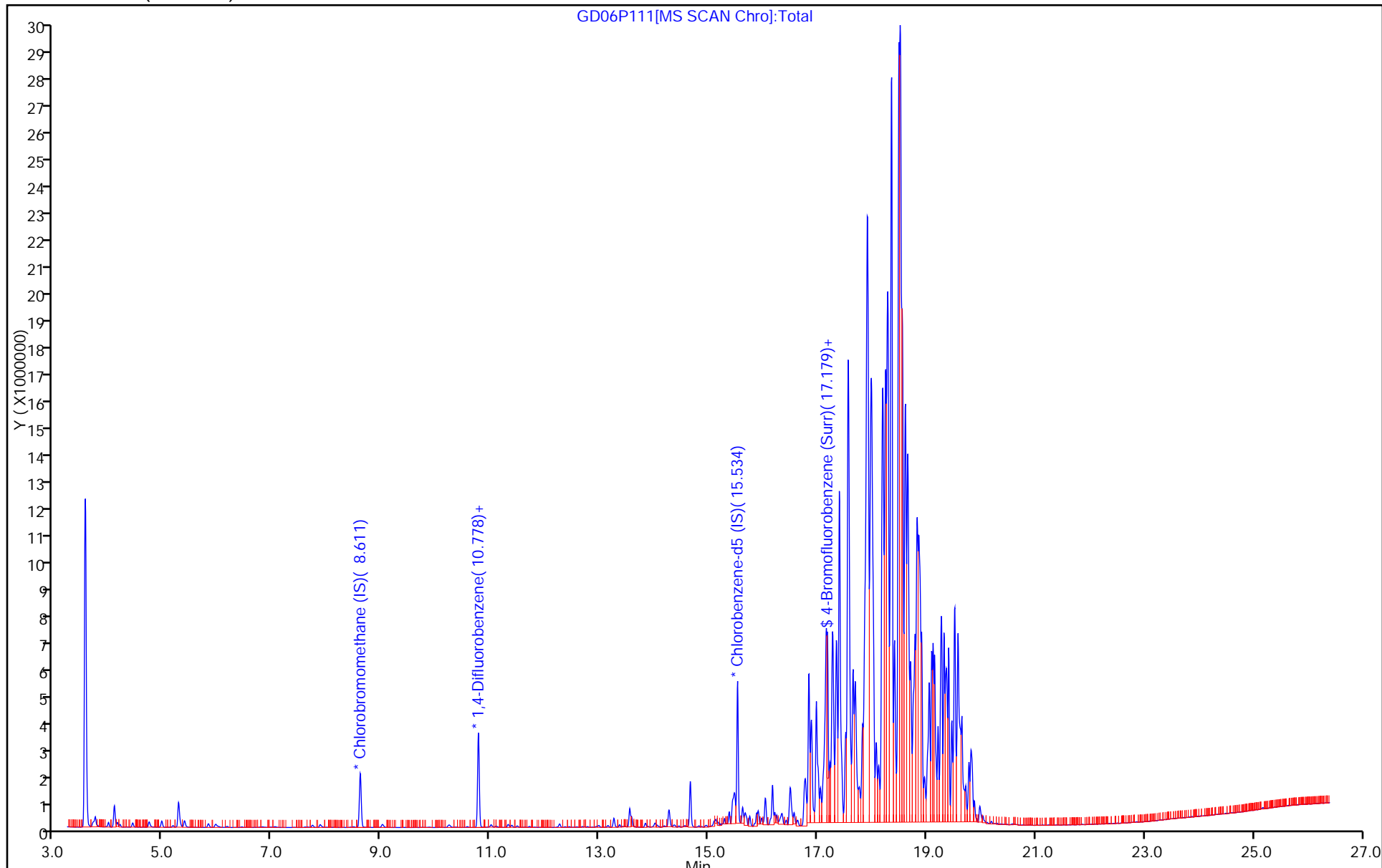
Dil. Factor: 1.0000

ALS Bottle#: 11

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P113.D

Injection Date: 07-Apr-2016 00:27:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-10

Lab Sample ID: 140-4707-10

Worklist Smp#: 18

Client ID: SV-168-A

Purge Vol: 500.000 mL

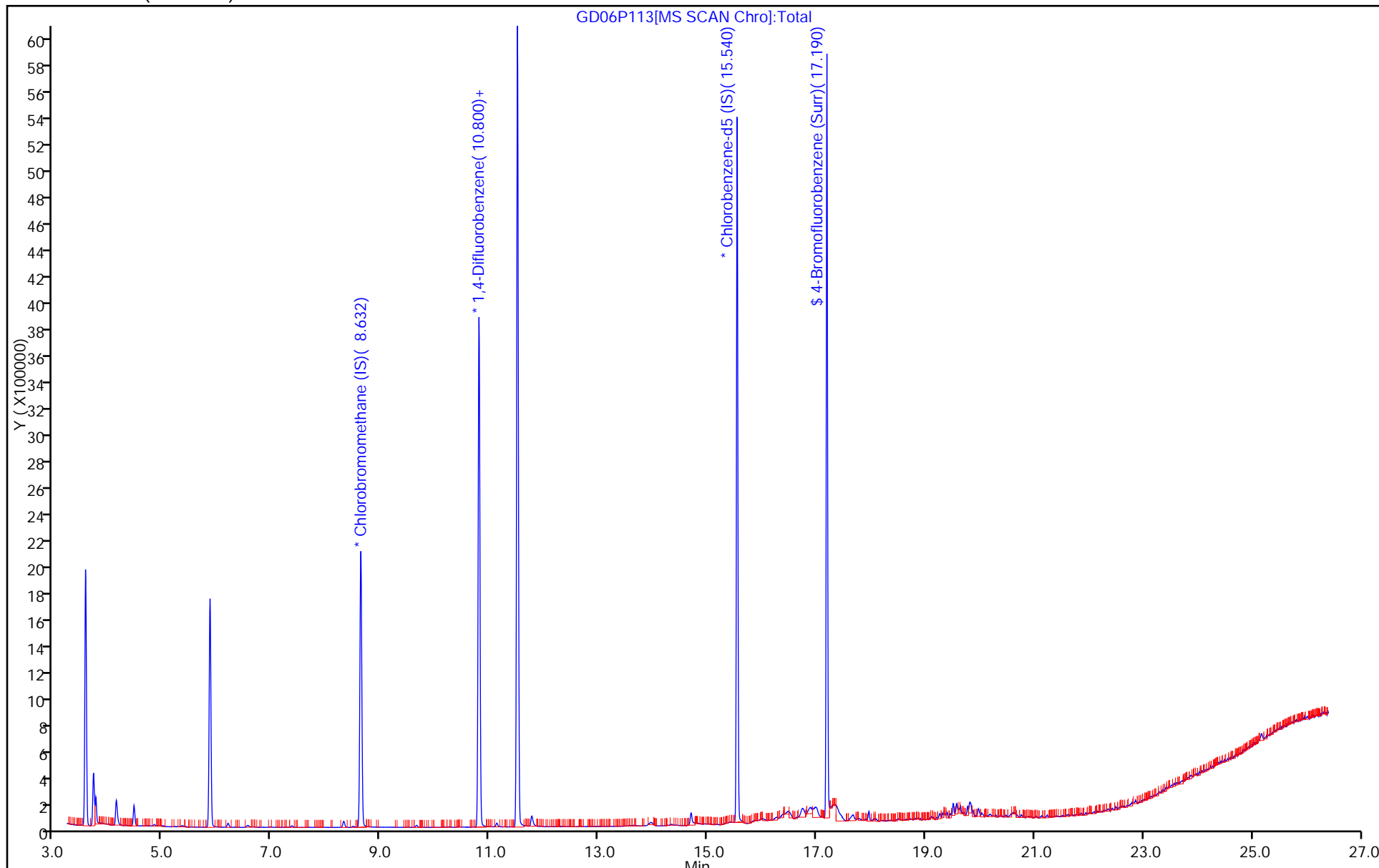
Dil. Factor: 30.3700

ALS Bottle#: 13

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MG\20160405-2724.b\GD06P114.D

Injection Date: 07-Apr-2016 01:09:30

Instrument ID: MG

Operator ID: 403648

Lims ID: 140-4707-A-11

Lab Sample ID: 140-4707-11

Worklist Smp#: 19

Client ID: SV-DUP-A

Purge Vol: 500.000 mL

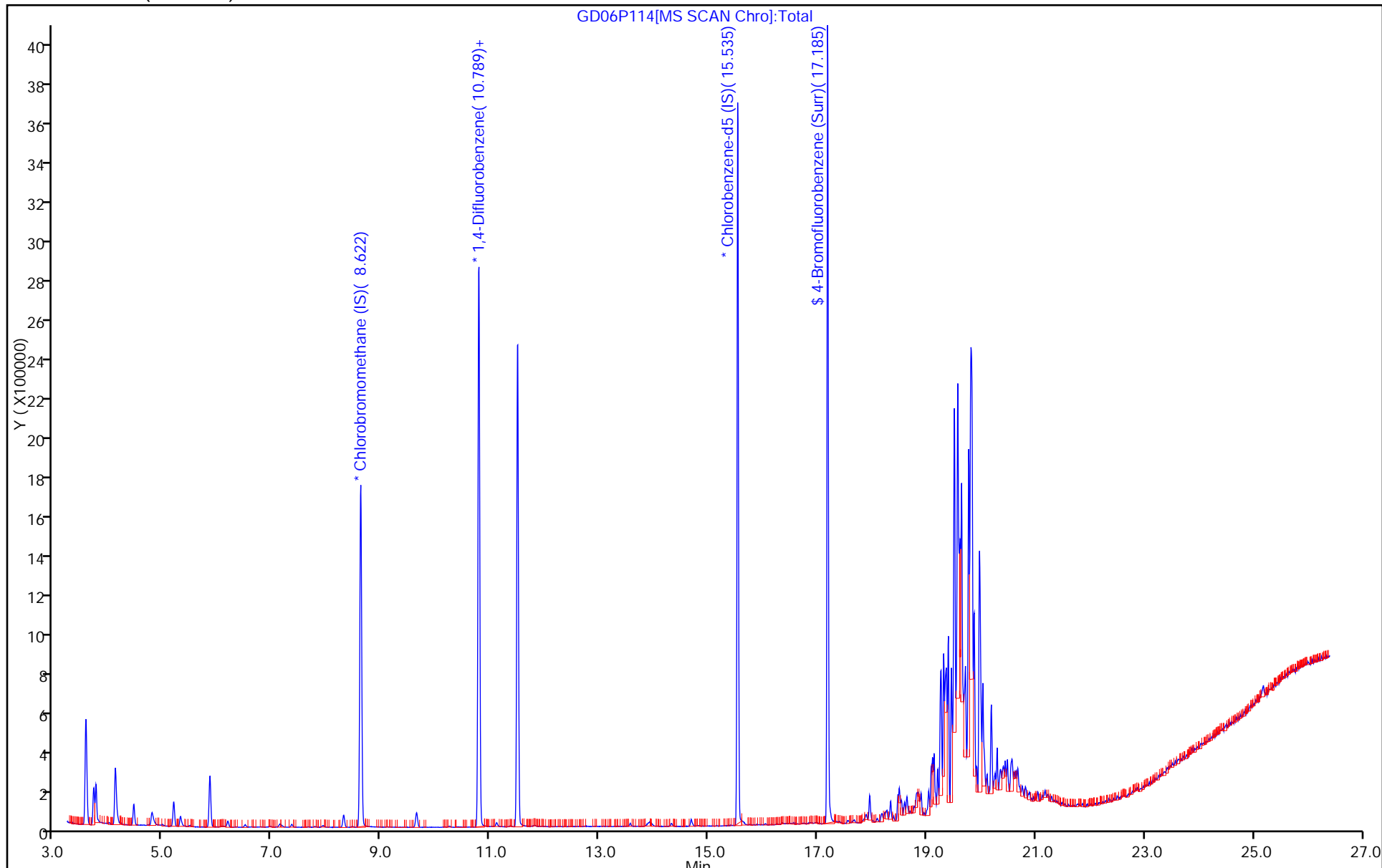
Dil. Factor: 1.0000

ALS Bottle#: 14

Method: MG\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MR\20160404-2719.b\RD07P112.D

Injection Date: 08-Apr-2016 02:48:30

Instrument ID: MR

Operator ID:

Lims ID: 140-4707-A-1

Lab Sample ID: 140-4707-1

Worklist Smp#: 23

Client ID: SV-169-A

Purge Vol: 500.000 mL

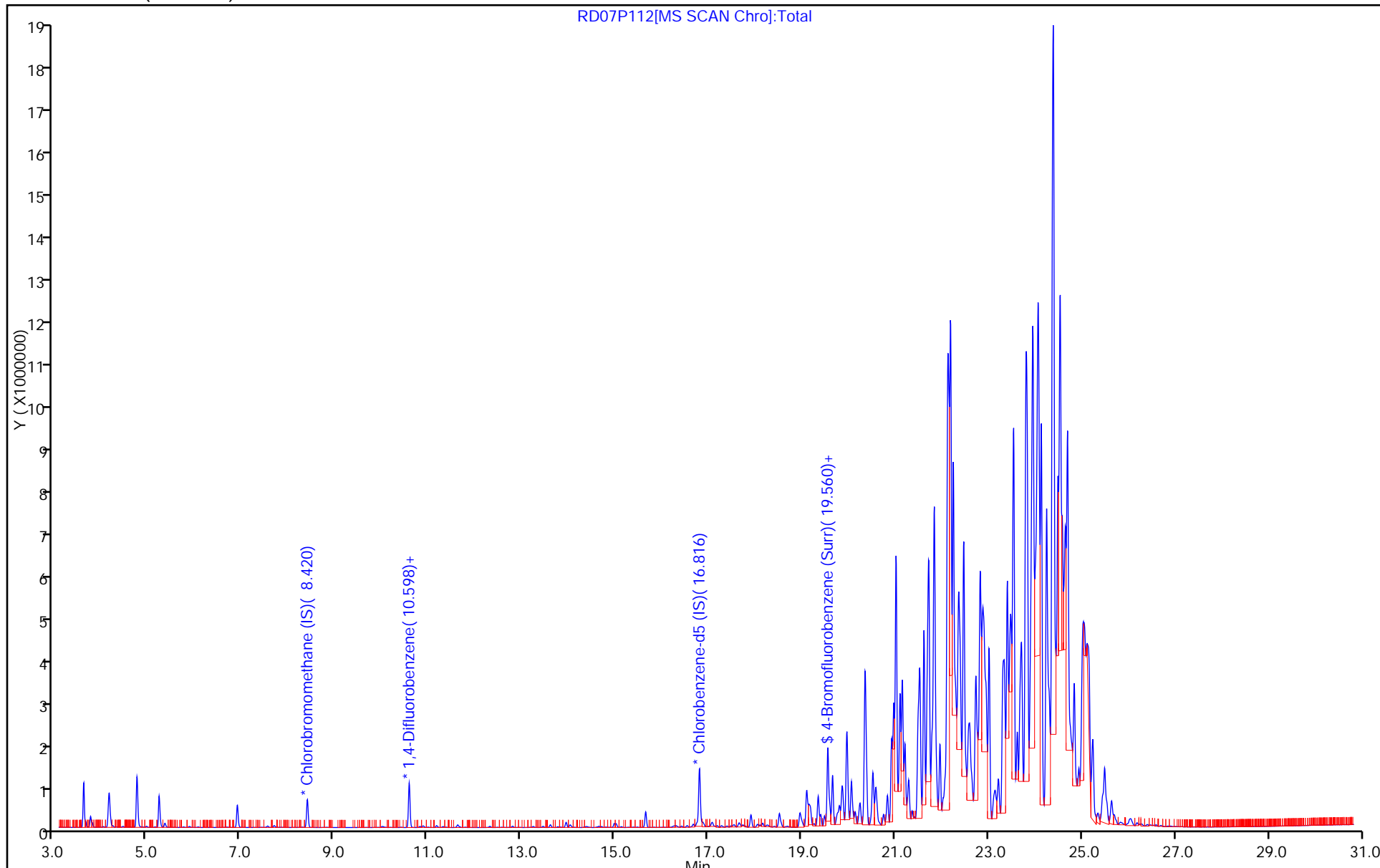
Dil. Factor: 3.5700

ALS Bottle#: 12

Method: MR\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MR\20160404-2719.b\RD07P113.D

Injection Date: 08-Apr-2016 03:40:30

Instrument ID: MR

Operator ID:

Lims ID: 140-4707-A-4

Lab Sample ID: 140-4707-4

Worklist Smp#: 24

Client ID: SV-173-A

Purge Vol: 500.000 mL

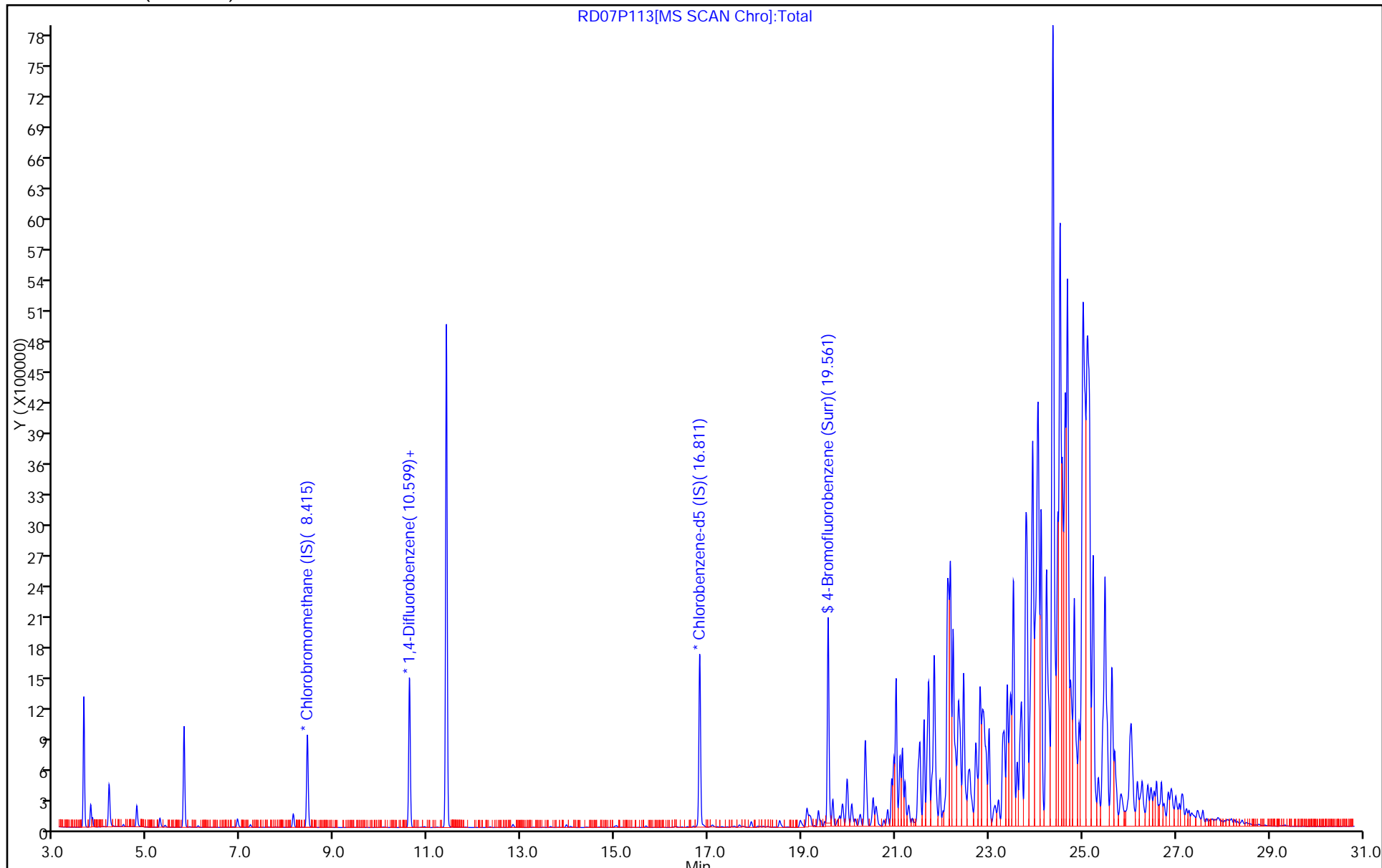
Dil. Factor: 13.5600

ALS Bottle#: 13

Method: MR\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)





TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MR\20160404-2720.b\RD08P108.D

Injection Date: 08-Apr-2016 22:40:30

Instrument ID: MR

Operator ID:

Lims ID: 140-4707-A-3

Lab Sample ID: 140-4707-3

Worklist Smp#: 15

Client ID: SV-172-A

Purge Vol: 500.000 mL

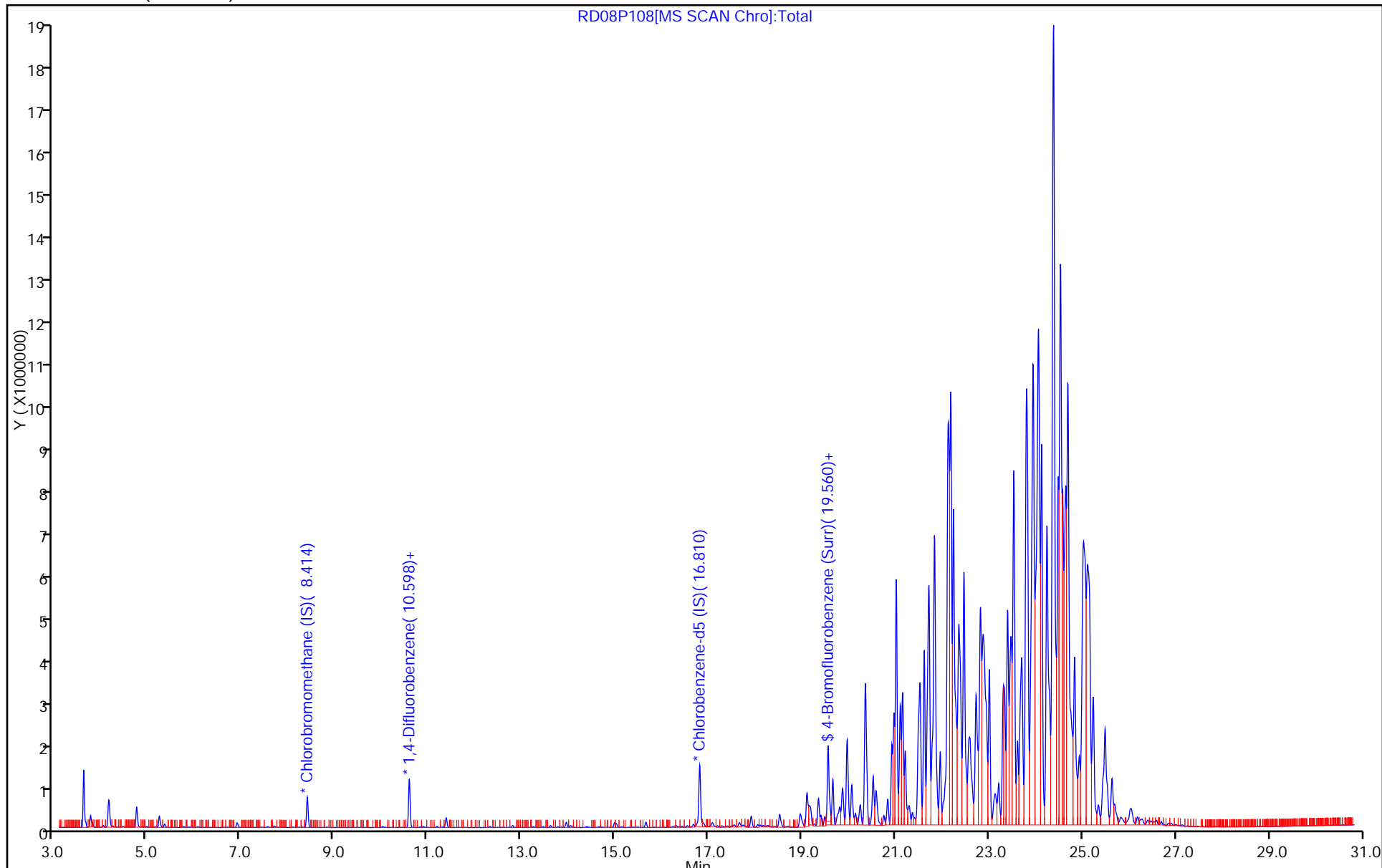
Dil. Factor: 1.0000

ALS Bottle#: 8

Method: MR\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)



TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\MR\20160404-2720.b\RD08P109.D

Injection Date: 08-Apr-2016 23:33:30

Instrument ID: MR

Operator ID:

Lims ID: 140-4707-A-9

Lab Sample ID: 140-4707-9

Worklist Smp#: 16

Client ID: SV-177-A

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

ALS Bottle#: 9

Method: MR\_TO15

Limit Group: MSA TO14A\_15 Routine ICAL

Column: RTX-5 (0.32 mm)

